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MARCH/APRIL 1984 / \$2.25

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#### ON THE COVER

Radically different painting and finishing techniques come into play on this issue's cover. Roscoe Creed's 1/48 scale Otaki Tojo shows off his unusual bare-metal finishing methods (page 38), while Ed Miller's 1/35 scale Vietnam-era M48A3 (page 46) provides a dusty, gritty contrast. Bill Ottinger's striking 80 mm Scythians, an original sculpture, are but one subject used as an example in a three-author article entitled "Painting your first figure in oils," which begins on page 56. Photos by Roscoe Creed, FSM Staff Photographer Paul A. Erler, and Bill Ottinger.

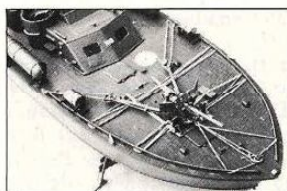


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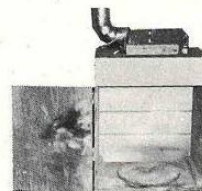
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## FSM UPDATE

FSM invites manufacturers and publishers to submit news releases, photos, product samples, and new catalogs. A description of our new-product announcement and review policies is available from FSM Update, FINESCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233.

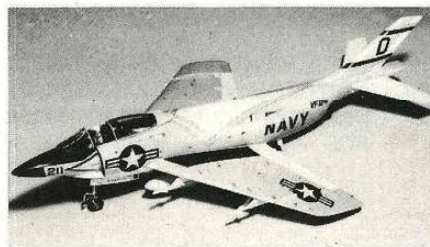
**Kit releases.** Burnaby Hobbies, 5209 Rumble Street, Burnaby, British Columbia V5J 2B7, Canada, has released kit No. 50, a 1/72 vacuum-formed Short 184 seaplane. The kit may be ordered from the manufacturer for \$10.00 Canadian plus \$1.00 for postage.

Kit No. 2 in the freighter series from Heritage Shipbuilders, P. O. Box 494, Lathrup Village, MI 48076, is a three-island-type freighter. Its wartime name was *War Fox*, and it later became the *Lake Forest*. Also released is the stemwinder freighter *Perregaux*. The scale of both kits is 1/16"=1' (1/192), and both come with vacuum-formed hulls, cast fittings, silk-screened superstructure and deck, assembly instructions, printed windows and doors, and a history of the ship.

Recently released Heritage Edition kits from Monogram Models, Inc., 8601 Waukegan Road, Morton Grove, IL 60053-2295, include No. 6056, 1/77 Ford Tri-Motor; 6057, 1/40 Kitty Hawk; 6058, 1/138 Super "G" Constellation; and 6059, 1/90 AC-47 "Spooky." Other releases from Monogram are No. 2214, 1/24 1970 Dodge Challenger T/A, and 2215, 1/24 1969 Dodge 440 "Six Pack."

New from PM Plastic Model, P. K. 133, Bakirköy, Istanbul, Turkey, is the 1/72 Northrop F-5A Freedom Fighter.

Rainbow Enterprises, Box 796, Westbury, NY 11590, produces two boat kits. The Lapstrake Dinghy, \$21.50 postpaid, measures 8" x 3 1/4" and contains mahogany, maple, and basswood, a ten-page instruction manual, and full-size patterns for all pieces. The Fisherman's Skiff, \$18.50 postpaid, measures 9 1/2" x 4 1/4" and comes with a preformed plastic hull, mahogany, basswood, and balsa, an electric outboard motor, and a battery holder.



Two recent 1/72 vacuum-formed releases from RAREplanes, 69 Redstone Hill, Redhill, Surrey, England, are Argentine FMA IA.58 Pucara and McDonnell F3H-2 Demon. The U. S. distributor is Brookhurst Hobbies, 12741 Brookhurst Way, Garden Grove, CA 92641.

The Testor Corporation, 620 Buckbee Street, Rockford, IL 61108-4891, will distribute Fujimi kits in the United States beginning this April. Releases planned in the 1/48 aircraft line include No. 311, UH-1B

"Huey" helicopter; 312, AH-1 Bell Cobra helicopter; 331, T-38 Talon; 332, A-4 Skyhawk; 333, A-6A Intruder; and 334, F-15 Eagle. Testor also plans to release two Fujimi 1/24 car kits: No. 351, Mazda RX-7, and 352, Porsche.

Several kits are scheduled to be released in the Testor/Italeri 1/35 military vehicle line, including No. 784, Katyusha; 801, Priest; 808, Panzer IV-H; and 811, Elefant. Testor plans to release these 1/48 Italeri aircraft kits: 586, F-5A; 588, YF-12; 589, Bearcat; and 591, P-47 Thunderbolt. Other Italeri kits from Testor will include No. 688, 1/72 Super Harrier; 689, 1/72 F-5F Tiger II; and 835, 1/24 Coupe Napoleon.

Thunderbird Models, Route 13, Box 257B, Fort Worth, TX 76119, has announced plans to produce a 1/72 Lockheed F-94C Starfire. The kit will feature fully detailed cockpits with separate ejection seats, detailed wheel wells, clear canopy, and decals.

**Decals.** Recently released 1/72 decals from Americals, 4373 Varsity Lane, Houston, TX 77004, include No. 7, Les cocardes francaises 1914-18, No. 8, American Cockades 1917-18, and No. 9, Belgische Kokarden 1914-18.

Microscale Decals, Krasel Industries, Inc., 1821 East Newport Circle, Santa Ana, CA 92705, has announced eight new decal sheets, four each in 1/72 and 1/48. In 1/72 is sheet No. 72-412, giving U. S. Marines low-visibility markings for two A-4M Skyhawks and F-4J and F-4S Phantom IIs. Sheet 72-413 has low-visibility markings for two Marine A-6E Intruders and two Marine F-18A Hornets. Sheet 72-414 and 72-415 each contains markings for two U. S. Navy SH-3 Seaking helicopters.

In 1/48, Microscale sheet 48-187 provides low-visibility markings for two Marine A-6s, and sheet 48-188 has low-visibility markings for a Marine F-4J and an F-4S. The subjects of sheet 48-189 are Air National Guard F-4C Phantom IIs from Michigan and North Dakota. Sheet 48-190 is for an F-86A and an F-86F Saber.

**Paints and adhesives.** Pacer Technology & Resources, Inc., 1600 Dell Avenue, Campbell, CA 95008, has introduced 8-fluid-ounce refill bottles of Zip Kicker and Z-Foam Primer. Each sells for \$7.95. In addition, Slo-Zap/CA- is now available in a 2-fluid-ounce bottle for \$9.98.

**Figures.** Imrie/Risley Miniatures, Inc., P. O. Box 89, Burnt Hills, NY 12027, has released No. C-105, 54 mm scale figures of Tiny Tim and Bob Cratchit, \$6.95. The figures come with a painting guide. A wooden base is available for \$1.50.



New figure sets in the "Personalities" series from Ral Partha, 5938 Carthage Court, Cincinnati, OH 45212, are No. 01-114,



thieves; 01-115, half orcs; and 01-119, Oriental werewereatures. Each set sells for \$4.50.

**Accessories and diorama materials.** Artone Venus modeling clay is a nonhardening, plastic clay manufactured by American Art Clay Co., Consumer Products Division, 4717 West Sixteenth Street, Indianapolis, IN 46222. The company says that Artone Venus will not shrink, and that modeled objects will not crack or sag and are unaffected by temperature and humidity. The clay is available in gray-green only.

Northeastern Scale Models, Inc., P. O. Box 425, Methuen, MA 01844, has introduced hardwood reproductions of turn-of-the-century balusters in 1" to 1' (1/12) scale. Stair balusters (SB series) are available in packages of six, while porch balusters (square PB series) come 12 to a package. Also available are a round PBC series, newel posts, and porch columns. Detailed handrails and porch top and bottom rails have been designed to match the new series.



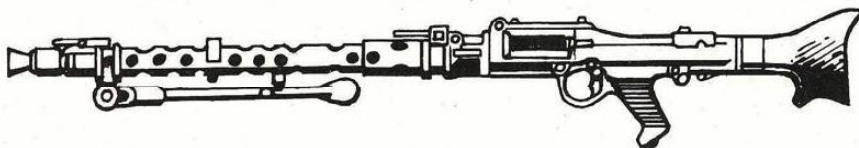
HO scale (1/87) cast-metal street and traffic lights, set No. D248, are available from Woodland Scenics, P. O. Box 98, Linn Creek, MO 65052. The price is \$3.98.

**Tools.** The Chameleon color changer is now available from Binks Manufacturing Company, 9201 West Belmont Avenue, Franklin Park, IL 60131. It enables airbrush users to select from among nine separate colors by dialing a selector ring mounted at the air-



brush head. It also permits blending of adjacent colors. The Chameleon sells for \$275.00, not including the Raven airbrush.

New products from Griffin Manufacturing Co., Inc., P. O. Box 308, Webster, NY 14580, are the pounce wheel No. 12 and the No. 45 stylus-burnisher. The pounce wheel, designed for marking patterns and tracing lines, features a polished, tapered alumi-



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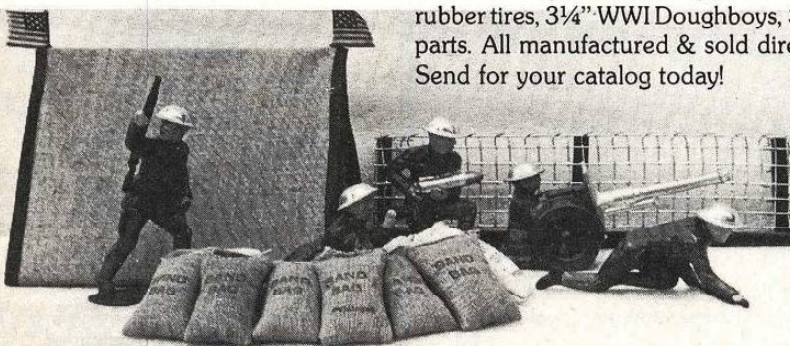
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- VJ-1 Coming in January 1984; 1:32nd scale OHKA Model 11/Model 43 vacuform kit, \$10.00
- VJ-2 OHKA Model 22; 1:32nd scale vacuform kit, \$7.50

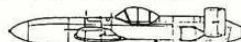


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num handle. The wheel is 7/16" in diameter, has 15 teeth, and swivels to follow circles and curves, or locks in place for straight work. It sells for \$2.79. The stylus-burnisher has a hard wooden handle, and the needle end is useful for scribing. The suggested retail price is \$1.99.

The new Hot Tools Multi Tip is one of ten interchangeable tips that can be used with the company's WB-1 Woodburner. The Multi Tip, available in stainless steel or copper, features 15 grooves and an angled design that burns 60 lines per inch. It is priced at \$7.50. For further information write to Hot Tools, Inc., 7 Hawkes Street, P. O. Box 615, Marblehead, MA 01945.

Maxon Precision Tools, P. O. Box 243, Carlstadt, NJ 07072, has added three wood-working tool sets to its Mascot series. The H860 set contains four carving knives with carbon and manganese alloy blades set in hardwood handles. The H861 and H862 sets include a 5/16" bent square chisel, 5/16" skew chisel, 5/32" straight small gouge, 5/16" bent large gouge, and 5/32" bent "V" parting tool. Tools in the H861 set are 5" long and have mushroom-shaped, palm-grip handles. Tools in the H862 set are 6" long and have straight handles.

A new series of seven miniature tool sets with plastic handles has been added to the Acu-Min line of Moody Tools, Inc., 42-60 Crompton Avenue, East Greenwich, RI 02818. Each set contains one locking, chuck-type, fluted plastic handle and several interchangeable tool ends packaged in a vinyl storage pouch. The seven sets are: No. 58-0186, slotted screwdriver set, one handle and six slotted blades in sizes .025"-.1"; 58-0189, English hex driver set, one handle and six hex blades in sizes .028"-.093"; 58-0191, metric hex driver set, one handle and six hex blades in sizes .7 mm-2.5 mm; 58-0193, spline driver set, one handle and five spline blades in sizes .033"-4 to .069"-4; 58-0194, open end wrench set, one handle and eight wrenches in sizes 5/64"-5/16"; 58-0197, socket wrench/nut driver set, one handle and five wrenches in sizes 5/64"-5/32"; and 58-0204, cross-recess driver set, one handle and four cross-recess blades in sizes 000-1. Prices for the sets range from \$8.00 to \$12.25.

**Catalogs.** A catalog of scale aircraft accessories and kits for vacuum-formed and converted models is available from Aeroclub Models, 5 Silverwood Avenue, Ravenshead, Notts. NG15 9BU, England. Enclose two International Reply Coupons.

Send \$2.00 to Aeroprint, 405 Monroe Street, Boonton, NJ 07005, for the 64-page, illustrated Aeroprint Catalog of Aviation Art Prints, No. 5.

Auto World, 701 North Keyser Avenue, Scranton, PA 18508, has released the 25th anniversary edition of its model car catalog. The 84-page catalog sells for \$3.00, including postage.

Brochure No. BI-1006 from Blackstone Industries, Inc., Route 6, Bethel, CT 06801, describes power tools available from the company's four divisions: Brett-Guard Company, Cutawl Company, Freedom Electric Company, and Olson Saw Company.

Bluejacket Shipcrafters, 93 Canal Street, P. O. Box 533, Shelton, CT 06484, sells its 26-page 1983-84 catalog for \$2.00. It lists kits, model fittings, supplies, tools, books, and plans.

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Classic Motorbooks, P. O. Box 1, Osceola, WI 54020, has released a 136-page 1984 book catalog. The catalog, which sells for \$2.00, lists more than 5,000 automotive titles, including nearly 1,000 new books.

A catalog of scale drawings, books, and squadron patches is available for \$1.00 from Coastal Forces, 137 Larkin Street, Bangor, ME 04401. Coastal Forces primarily focuses on World War Two PT, MTB, MGB, and ML boats of the U. S. Navy and Royal Navy.

Danhausen Modelcar, Kleinkölnstrasse 20/22, 5100 Aachen, West Germany, has published the *World Modelcar Book '84*. This catalog shows nearly all model cars available on the market, more than 10,000 in all. The price is DM 17,50 (airmail) or DM 12,00 (surface mail). Assign the money to the post bank account number 90890-507 Köln and enclose a filled in and signed Eurocheque, or list your credit card number and expiration date.

A free, 12-page catalog of accessories for miniature power tools is available from Foredom Electric Company, Route 6, Bethel, CT 06801. Also available is catalog sheet No. 294, which contains photos, features, specifications, applications, and speed recommendations for two new types of burrs: standard cut carbide burrs and tungsten carbide burrs with special carbide teeth.

Historex Agents, 3 Castle Street, Dover, Kent CT16 1QJ, England, has released a new catalog which contains 96 black-and-white pages and 24 color pages. Send \$9.52 to receive an airmail copy, \$5.92 for surface mail. Mastercard, Visa, and personal checks are accepted (there is no foreign-currency check conversion charge).

Hobymodelbau F. Schmidt, Neustadter Strasse 65A, 6704 Mutterstadt, West Germany, offers a catalog listing vacuum-formed aircraft kits and an extensive line of vacuum-formed military vehicle kits. The catalog also includes brief instructions (in English and German) for assembling vacuum-formed models.

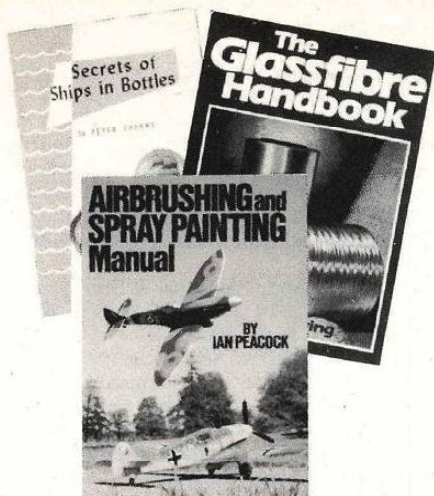
InfoServ Ltd., Box 1199, New Milford, CT 06776, sells a 50-page, Fall/Winter 1983-1984 catalog specializing in arms and military reference and nonfiction books, videotapes, records, prints, and specialty items. The price is \$1.50.

Portrayal Press, P. O. Box 1913, Bloomfield, NJ 07003, offers a catalog listing books about military vehicles.

**Miscellaneous.** Modelers unable to obtain SuperWeld and SuperMask (see Fall 1983 "FSM Looks at New Products") from a hobby shop may order directly from D. G. Modelling Products, 8080 Langdon Avenue, Van Nuys, CA 91406. Add shipping charges of \$1.55 for the first two bottles and \$.50 for each additional bottle.

Hobby Endeavors, Box 2, 9903 104th Street, Edmonton, Alberta T5K 0E4, Canada, sells pre-made, round, bamboo treenails, drill gauge size No. 40, which can be used for wooden doweling. The treenails are 10" long and have one pointed end. They can be used in conjunction with Dockyard Model Company's Tree-nailer or drill point gauges. Sizes No. 45 and smaller are available by special order. The treenails come in packages of 25 for \$6.95, 50 for \$10.95, 75 for \$16.95, and 100 for \$21.95. Add \$2.00 for postage and handling; overseas residents should add \$3.00. Hobby Endeavors also

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sells glass microscope slide covers useful for modeling windows. They come in squares, rectangles, and circles in various sizes and thicknesses.

A one-year membership in the International Naval Research Organization, P. O. Box 3249, First Street Station, Radford, VA 24143, starts at \$15.00 and includes four issues of *Warship International*; the book service, which makes current naval literature available at a 10 percent discount; and the photograph service, which sells sets of warship photos.

Nation's Capital Archives & Storage Systems, Inc., 2010 Fenwick Street, N.E., Washington, D. C., 20002, offers a modular storage unit system featuring acrylic varnished leatherette compartments, acrylic panels, and PVC connectors which can be assembled without tools to make cabinets or wall systems. The standard module is a 12" cube, but custom sizes and finishes are available.

Oak Hill Graphics, 205 South Water Street, Northfield, MN 55057, has released a 24" x 86" scenic background. Minnesota wildlife artist Stan Finnemore painted the original art, and the reproduction is hand silk-screened in four colors plus a texture screen on a single sheet of 30" x 90" heavy paper. One background sells for \$19.95, two are \$34.95, three are \$49.95, and four or more are \$15.95 each; add \$2.00 per order for postage and handling.

Audio cassettes of aircraft engine sounds are available from Photos & Sounds By Painters, 1415 Clinton Avenue, Kalamazoo, MI 49001. Five selections have been released, and each includes narration: Vol-

ume 1, 18-cylinder-engined aircraft; Volume 2, T-6 Texan; Volume 3, warbirds at 1981 and 1982 air shows; Volume 4, modified tractor pulling, which includes sounds of multi-engined and aircraft-engined tractors; and Volume 5, warbirds at 1983 air shows. Each cassette is 60 minutes long and costs \$9.95, except for Volume 4, which costs \$8.95 for a 45-minute tape.

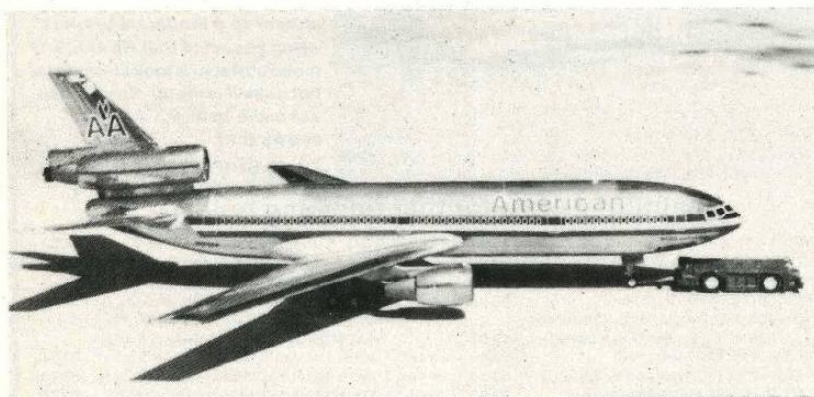
Full-size plans for the model starship *Ikor* are available from Starship Designs Company, P. O. Box 324, Palos Park, IL 60464. The plans, \$25.00 postpaid, include four sheets 40" x 28", plus instructions. The completed model is 34" long, 10 1/4" wide, and 10 1/4" high.

*Timberperson*, P. O. Box 3695, Eugene, OR 97403, is a quarterly publication "dedicated to the collection, preservation, and dissemination of logging trivia and obscurata." The magazine publishes original histories, drawings, photographs, humor, and reprints of articles from early lumber trade journals. Subscriptions cost \$10.00 per year in the United States, \$12.00 in Canada; rates for other countries are available upon request.

**Coming events.** Two trade shows have been announced which will feature model airplanes, automobiles, and boats. The first show will be February 25 and 26, 1984, at the Westchester County Center, White Plains, New York. The second show will be held April 6-8 at the Toledo Sports Arena, Toledo, Ohio. Both shows are open to the public. For more information, write to Taubman Plans Service, 11 College Drive, Box 4G, Jersey City, NJ 07305. **FSM**

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## FSM READER FORUM

Let us know what you think! Comments, suggestions, corrections, and additional information on FSM articles are welcome in this column. Letters submitted for publication should be clearly marked "To the Editor" on both the envelope and the letter, should be typed or hand-printed, and should be no more than 300 words long.

**Bimonthly, and questions, too.** I'm glad your magazine is going bimonthly. No, to be exact, I'm overwhelmed with joy. I'm jumping up and down this very moment pulling every strand of hair from my head on account of your announcement in the Jan/Feb 1984 issue of FSM.

There was once a time when I was stranded with no good magazine on modeling to read between issues of FSM. But now, the wait is shortened by one month. And that means one less month of rereading back issues of your excellent magazine. It is not that I don't enjoy rereading FSM, but after reading every issue three hundred times, the magazines become a little worn.

I'm also thrilled that you will be having a "Questions and Answers" column. That department will hear a lot from me as I have "billions" of unanswered questions to ask.

*P. F. Eng  
New York, N. Y.*

**These are complaints?** Complaints! Complaints! Complaints! After reading every issue since the first, there is only one thing that I have to complain about your magazine, and that is that I can't find anything to complain about!

It's absolutely an outstanding magazine! I have loved every issue of it and would recommend it to anyone who is interested in the hobby of plastic scale miniatures and preserving this growing art form!

I was elated to find that you plan to go bimonthly, and to note that you plan to increase each issue with more interesting works of art! Although I have been interested in the hobby for the last 20 years, I find that I am more of an amateur with each passing year, what with competition and young imaginations entering the hobby. It seems that my faith in my own ideas grows weaker and weaker as I find someone else that has already had the same idea! But I haven't given up yet! I have a couple of tricks up my sleeve that if it weren't for some loyal and very helpful IPMS members, my projects would have never seen the light of day.

The year 1984 promises to be a most exciting one for our hobby, and with such a fine magazine as FSM who knows what the new generation may come up with! Well, that's it for now, keep up the fine work!

*Larry K. Parent  
Fort Myers, Fla.*

**Another decal problem solved.** I was especially pleased to read the article by Paul Boyer on decals in the January/February 1984 issue. He explained the process quite well and let me know that I was not alone in the problems I had suffered with these most

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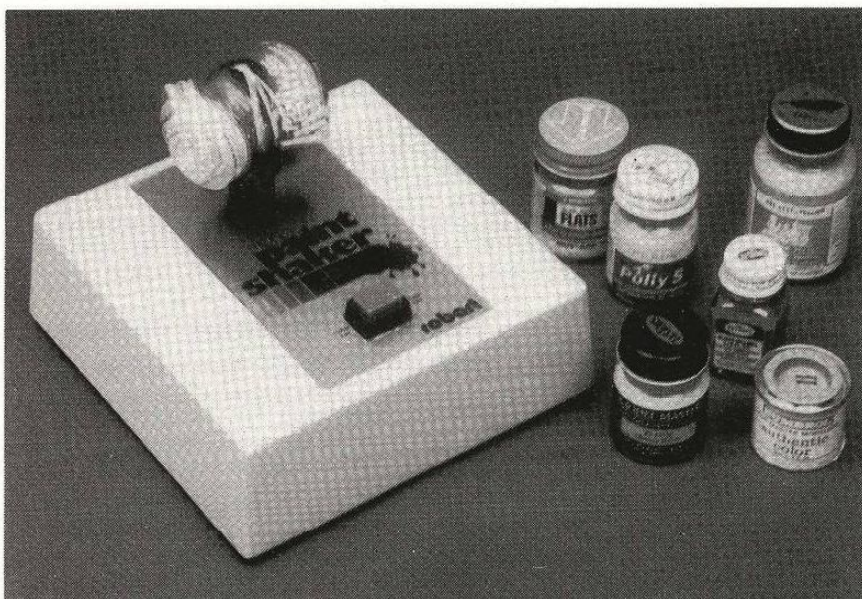
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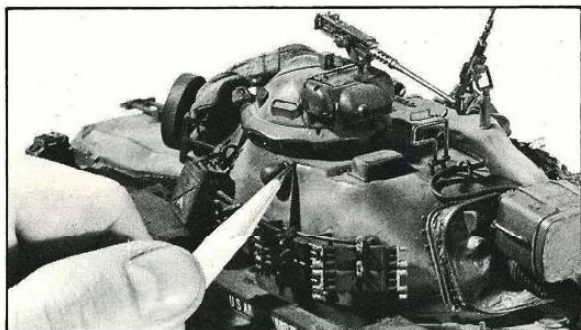
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## FSM: Your guide, from start to finish!



Tank weathering techniques (pages 46-52). FSM: Paul A. Erler.

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necessary items. One product that he did not mention — probably because it was not on the market at the time he was preparing his article — is Microscale's brand new Super Film.

I had experienced great difficulty with kit decals that disintegrated before I could position them on the model. A light coat of Super Film over each decal neatly solved that problem.

Again thanks for the fine work, it really is appreciated. I look forward to the increased number of issues under your new bimonthly schedule.

*John Campbell  
Mars Hill, N. C.*

**Overwhelmed by guilt.** I just bought my fourth copy of FSM and my guilt finally overwhelmed me. Each time I read an issue I promised myself that I would write to congratulate you on the quality of the magazine. Each time I didn't. So let me say finally that FSM is the best magazine for modelers I have read (including various English publications). The choice of articles, the quality of editing and writing, the pictures and illustrations, and the reviews of various models, tools, etc., all set new standards for a publication devoted to the craft of scale modeling. Some of the British magazines have longer historical articles, but who needs an illustration of every mark of every plane of every squadron in Great Britain (and seldom anywhere else)?

The standards of quality of your articles on various aspects of model building are equally high, and they are a good deal more catholic in subject. No magazine can supply adequate historical information on all subjects; that material is available elsewhere and easily found by any moderately serious modeler (even me). What is not easy to find is a useful article on techniques for modeling which are not either commonplace or too brief and elliptical to help an advanced novice like myself (maybe a journeyman by now). I wish I were skilled enough to do an article for you.

I especially liked your recent article by Doug Emmons on card models. I have collected them off and on for several years and only recently began to build them. Last summer in Maine I began to build them because it is impossible to lug all the tools for other models up and back in a small car. A sharp knife and a handful of simple supplies were all I needed. I notice more and more ads for them; did you include card modeling in FSM because it is a growing area?

*Philip Landon  
Catonsville, Md.*

[Many thanks for all the nice things you said about FSM. Although I don't know whether card modeling is growing faster than any other area of modeling, there's growing interest in all aspects of the hobby, which probably means a bright future for card modeling as well. It's important to understand that to write an article for FSM you don't have to be (a) an expert modeler, (b) a professional writer, or (c) a contest winner. What you do need to be is an enthusiastic modeler with an urge to share your ideas and techniques with others. If that sounds like you, write to our Editorial Secretary for a copy of our free handout, "Writing Articles for FineScale Modeler." — B. H.] **FSM**



Every FSM Workbench Review is a first-hand report by a modeler who has actually built the kit or used the product. While our reviewers are encouraged to compare the products to similar ones in their experience, evaluation is of secondary importance; the reviewer's primary goal is to provide a detailed description of the product so FSM readers can evaluate it for themselves. Models shown in Workbench Reviews are built straight from the box.

**Kit:** No. 4725, Rockwell B-1B

**Scale:** 1/48

**Manufacturer:** Revell, Inc., 4223 Glencoe Avenue, Venice, CA 90291

**Price:** \$30.00.

THE B-1B BOMBER has been resurrected by the Reagan administration as the replacement for the rapidly aging B-52 fleet. Until the advent of the secret "Stealth" bomber, it will be the front-line equipment of the Strategic Air Command.

The kit contains 264 parts molded in white and tinted clear styrene, with 10 rubber tires. The instruction booklet consists of 90 easy-to-follow steps and the decals include markings for white, gunship gray, and Asia Minor paint schemes. The instructions suggest weighting the nose with a dead C-cell battery wrapped in a plastic bag and taped into the forward fuselage.

The strong point of the kit is the above-average molded-in detail which includes complete cockpit interior, three bomb bays that contain two rotating SRAM launchers and a fuel tank, and detailed wheel wells.



All photos, FINESCALE MODELER: A. L. Schmidt or Paul A. Erler unless otherwise credited.

The fit of the parts is less than satisfactory. The main gear bay top (part A54) was warped so badly that I had to heat it in hot water to bend it back into shape. To make them easier to paint, I left off the engine nacelles until after the assembly of the fuselage components. It was a good thing that I did because the fit of the forward and rear fuselage components to the center fuselage assembly was the worst I have ever encountered. I had to use an auto-body rasp to file down the center section, which was  $\frac{1}{8}$ " wider than the nose and tail. If the nacelles had been installed in sequence, they would have made things difficult.

The variable-geometry wings pivot but are not geared together as in smaller kits. I

felt that the wing pivots were inadequate for the weight of the wings and some sort of linkage would have been desirable.

It's not likely that you will put the completed model on your desk: It measures 36 inches long with a wingspan (swept forward) of 34 inches! It scales well with the information in *Jane's All the World's Aircraft, 1980-81* but there could be other changes in the aircraft before it reaches production.

It's a handsome model that looks like the real thing, but it takes a lot of effort to get it to that point. It took me 45 hours to complete the model, much of that struggling with the fit. I can recommend this kit only to builders experienced in correcting major construction problems. *Larry Schramm*

**Kit:** No. 813, *Preussen*

**Scale:** 1/150

**Manufacturer:** Heller, distributed by Polk's Model Craft Hobbies, Inc., 346 Bergen Avenue, Jersey City, NJ 07304

**Price:** \$125.00.

THE WORLD'S LARGEST square-rigged sailing ship, the *Preussen* (built in 1902) featured five masts with 46 sails. Several steam-driven deck winches and advanced halyard and brace winches lessened the workload of her 46-man crew.

Heller's kit contains over 400 styrene parts along with rigging line, brass anchor chain, and vacuum-formed sails. Also included is Heller's standard loom for weaving shrouds and ratlines. Detailing is good, with sharp scrollwork on the bow and stern. The decks have raised wood grain with recessed lines between planks. The multilingual instructions (English, French, German, Spanish) have 43 steps and are easy to follow.

The assembly sequence is similar to other Heller sailing ships; the hull and main decks are assembled first, followed by deck details, then the masts and yards. The final steps are the addition of the sails and the rigging. I had to sand the raised foredeck and poop deck to get them to fit snugly

against the hull. The railings along the forward and aft ends of the raised decks should be glued flush with the edge of the deck, but the instructions seem to show them glued to the top of the deck. The forward catwalk was  $\frac{1}{8}$ " short so I extended it with Evergreen strip styrene. The catwalks have several vertical supports with round ends that don't provide much bonding surface so I made flanges from Grandt Line washer castings. I painted the model with Floquil and Pactra paints.

The directions for rigging the ship seemed backwards to me. Following Heller's sequence could result in problems with proper line tension and difficulty reaching in and tying off some of the lines. I first completed the standing rigging, added the sails and their lines, then finished by setting the braces. Even so, if you follow the instructions faithfully, there will be a place to tie off each line and the finished model will look fine. I was surprised that no blocks or turnbuckles were included in this kit since all the other ships in this series have them.

Heller calls for unusual belaying points for some lines so I relied on Tre Tryckare's *The Lore of Ships*, Oliver Allen's *The Windjammers*, and an article in the German magazine *Modell-Fan* for more accurate information. The model scaled well with the



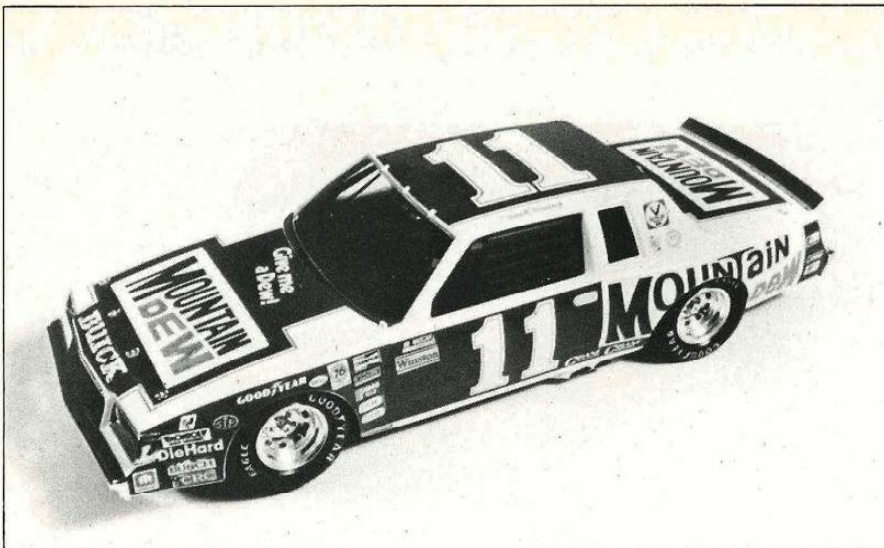
Mark V. Persichetti

dimensions given on the instruction sheet.

The *Preussen* is not a simple kit and I recommend it only to experienced modelers. It took much of my spare time spread out over six months to finish, and I still want to add more rigging. The *Preussen* wasn't any more difficult than similar kits in this scale, but the five masts double the amount of rigging involved. It's big (38½" long) and it sure looks impressive on the mantel.

*Mark V. Persichetti*





Jack H. Smith

**Kit:** No. 2204, Mountain Dew Regal

**Scale:** 1/24

**Manufacturer:** Monogram Models, Inc., Morton Grove, IL 60053

**Price:** \$5.50.

THE GRAND NATIONAL race car series from Monogram includes two Thunderbirds and two Buick Regals. The Mountain Dew Regal kit contains 88 parts molded in white, clear, and chromed styrene, and vinyl tires.

Jack H. Smith



**Kit:** No. ET 118-83C, Martin X-24A and B

**Scale:** 1/72

**Manufacturer:** Eagles Talon, Inc., P. O. Box 156, Sun Valley, CA 91352

**Price:** \$12.95.

SPACE SHUTTLE TECHNOLOGY was developed with a series of rocket-engined research aircraft known as "lifting bodies." NASA used the Northrop MF2F and HL-10 designs while the USAF flew the Martin X-24. In reality, the X-24B was the X-24A with short wings and a long, flat-bottomed nose added to test another design. The re-

sults of testing these shapes eventually led to the design of the now-familiar orbiters *Columbia* and *Challenger*.

This vacuum-formed kit contains 83 parts molded in .040" white styrene with clear canopies. This is a double kit with all the parts necessary to make both the X-24A and the later X-24B. The five-color decal sheet provides markings for both aircraft but was a little off register. The instruction sheet includes a brief history, exploded views, construction notes, three-view drawings, and markings instructions.

I built the X-24B for this review. The

The one-piece body shell and the front and rear suspension are especially well molded and the decal sheet is striking. The only desirable improvement to the instructions would be naming the parts in addition to numbering them.

It's important to assemble the kit following the steps in the instructions. I built the engine as a subassembly for later installation, but found that the chassis bracing installed in step 23 made it difficult to install the engine. I do recommend, however, that step 7 and the steering wheel in step 19 be installed after the chassis is painted. The header pipes (parts 26 and 73) don't fit together well but the rest of the kit had outstanding fit. The windscreen was not in a separate wrapping and was scratched so I used one from a second kit.

I used Tamiya's new acrylic Gloss White for the body along with Pactra and Testor paints for the interior and details. I sanded the tread areas of the tires to simulate wear. The completed model looks accurate and colorful. I spent 17 hours on the kit which provided a much-needed respite from building aircraft models. I recommend it to modelers with a little experience.

Jack H. Smith

parts have good detail and the kit goes together well. The only part that gave me trouble was attaching the tiny wings and outer tails; I had to use a little filler where they join the fuselage. I used the kit interior, but the cockpit was too wide and too shallow.

The kit provides wheels but no landing gear struts. The X-24 used an F11F Tiger nose gear and T-38 Talon main gears. Since I had spare 1/72 scale gear from the Hasegawa kits, I modified them to fit into the model. The lower portion of the main gear struts has to be rotated 90 degrees since the X-24 gear retracted to the rear rather than toward the center line as on the T-38.

I airbrushed the model with Floquil Reefer White and Engine Black. The dark blue and gold edging was made from solid color Microscale decals (sheet Nos. TF-7 and TF-3). The national insignia are from Scale-Master (No. SM-26) and the rest of the markings are from the kit.

The finished model compares well with the dimensions given in *Air Enthusiast* No. 8 (Oct. 78-Jan. 79) and *Aerophile* Volume 1, No. 2. I spent about 20 hours on the model, average for a vacuum-formed kit. Its unusual shape makes it quite a conversation piece. It's easy to build and fits well, so if you have never built a vacuum-formed kit, you might want to make this one your first.

Paul Boyer

**Kit:** No. 002, Supermarine Spitfire F.22/24

**Scale:** 1/72

**Manufacturer:** Pegasus, Strebor House, Thurston Park, Whitstable, Kent, England

**Price:** \$7.00.

MIXED-UP MYTHOLOGY perhaps, but Pegasus has risen from the ashes of the now-defunct Veeday Models. Pegasus models are limited-run, injection-molded plastic aircraft kits produced by an enthusiast in his home, and it is important to keep

that fact in mind while building this one.

This is Pegasus' first complete kit, following its 1/72 scale Harrier two-seat conversion. The kit contains 16 parts molded in white and clear styrene. The white plastic is fairly soft, but the clear plastic is hard and brittle. This wouldn't be bad if only the canopy were molded in clear, but the tail planes, vertical tail, landing gear, radiators, and propeller are too. My kit's prop was shattered so I substituted the Frog Mk. XIV propeller. There are brief instructions in-

cluding a three-view drawing, but no decals are supplied.

The molding and detail are inferior to mass-produced injection-molded kits. The parts are attached to huge sprues so I sawed them off rather than risk damaging the parts by chopping them off with a knife. The raised panel line detail is reminiscent of better vacuum-formed kits, but the texture of the moldings is rough and requires a lot of cleanup. Besides the unusable prop, I also substituted for the tail wheel



and had to cut gear doors from sheet styrene.

Construction required lots of effort; the fit was not good and much of the detail was eliminated by filling and sanding. The wings and tail plane were acceptably thick at the leading edge but retained that thickness throughout the chord. The result was surfaces that appeared to have no airfoil shape at all. The wing cannon fairings were undersized. When viewed in profile, the rear fuselage was not deep enough and the characteristic vertical tail was misshapen.

I painted my model with Spray 'n' Plate Non-Buffering and used decals from my spares box. I hand lettered the serial number. The kit scales well with the dimensions in Squadron/Signal's *Spitfire in Action* and Arco-Aircam's No. 8 *Supermarine Spitfire Mk. XII-24*.

A beginner could slap this kit together in no time, but to produce an accurate representation of the final version of the Spitfire, you would have to spend much more time than the 16 hours I spent on mine.

*Will Reynolds*



**Kit:** No. M3625, M151A2 Mutt with TOW

**Scale:** 1/35

**Manufacturer:** MRC-Tamiya, Model Rectifier Corporation, Edison, NJ 08817

**Price:** \$7.98.

TO FOLLOW THE STOCK M151 Mutt (reviewed in the Spring 1983 FSM), MRC-Tamiya has released the kit with the addition of the TOW missile launcher. TOW stands for Tube launched, Optically tracked, Wire guided, and the antitank weapon can be launched from a vehicle, tripod, or aircraft.

The kit contains 130 parts molded in styrene and a die-cut acetate windshield. The TOW launcher can be installed on a pedestal in the vehicle or outside on an optional tripod. Some of the parts on the sprues are from the original kit and are not used for this version. The detail is up to MRC-Tamiya's usual standards. There were a few minor mold marks which were easily eliminated. The ten-step instructions are well illustrated and include four-view drawings of both Army and Marine versions.

The kit went together without a hitch and all the components fit superbly. The driver's seat, windshield and frame, radio, guidance control box, missile launcher, and accessories were painted separately. I used Testor's Model Master paints following the painting guide in the instructions and the box top. Tamiya didn't intend for the launcher to be built loaded since the thickness of the launcher moldings prevents the tube from fitting into it.

The kit scaled well with measurements I've taken from the actual vehicle. The kit took me 10 hours to build. It's one of the best 1/35 scale armor kits available and I can recommend it to beginners who have built a few armor kits.

*David Schemel*



**Kit:** No. KAE-5, Junkers Ju-88

**Scale:** 1/48

**Manufacturer:** Koster Aero Enterprises, 233 East Ellis Avenue, Libertyville, IL 60048

**Price:** \$18.95.

KOSTER AERO ENTERPRISE'S first complete vacuum-formed kit contains 91 vacuum-formed parts molded in white and clear styrene and 49 parts of injection-molded black styrene. The kit also contains detailed instructions and a four-color decal sheet.

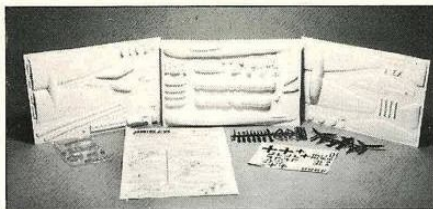
The kit provides options to produce seven different variants of the Ju-88: Ju-88A-4, C-5, C-6, G-1, G-6, R-2, and S-1. I chose to build the G-6 version. The instructions cover all the possibilities and show how to produce the C-6 and R-2 radar antenna array, which is not included in the kit. Both Jumo and BMW engine nacelles are provided.

For a vacuum-formed kit, the molding and detail are outstanding. The clarity of the 22-step instruction sheet is as good as,

if not better than, some found in injection-molded kits. The excellent decal sheet provides markings for all seven versions.

This is a complicated kit so follow the instructions carefully. I had trouble fitting the engine nacelles to the wing, but I think that this was faulty technique on my part rather than a problem in the kit. I recommend that the engine nacelles be completed and dry-fitted to the unassembled wing halves before they are attached. Attention to the instructions is important in





step 13; this involves cutting away some of the canopy for the double gun blister. A slipup here might spell disaster since errant cuts would be hard to correct on the clear plastic. The wing spar helps establish the proper wing dihedral and adds strength to the critical wing-fuselage assembly.

I didn't check the scale of the model, but it successfully captures the shape of the aircraft compared with available photos. Although the kit goes together without major problems, it is not simple to build. If you have never built a vacuum-formed kit, don't start with this one. However, a modeler who has experience with vacuum-formed kits shouldn't have any trouble. I spent 30 hours on mine and was satisfied with the completed model.

*Jerry Hoffman*



*Jerry Hoffman*

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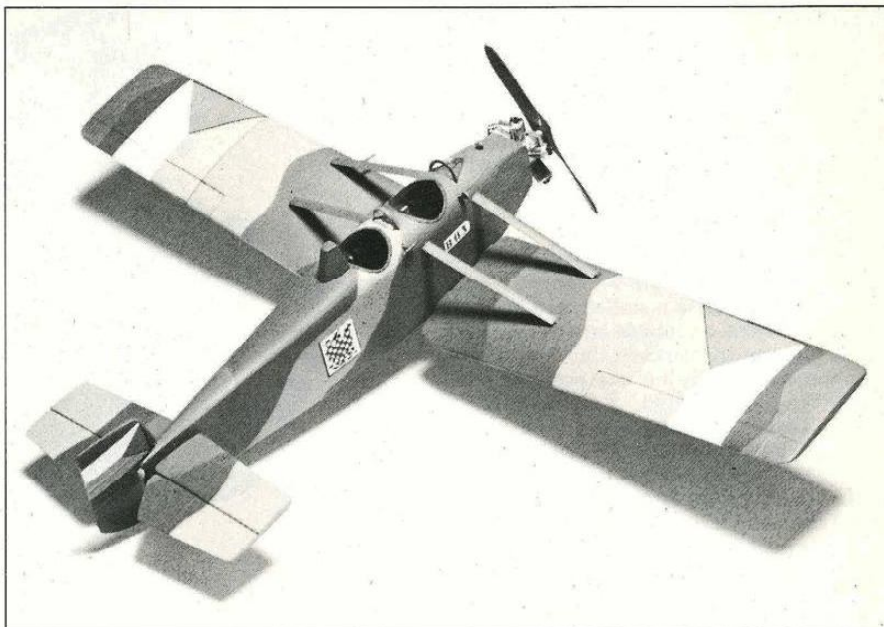
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Kit: No. ART. 121, Avia B. H. 11

Scale: 1/50

Manufacturer: Smer, Czechoslovakia

Price: \$5.95.

THE AVIA B. H. 11 was a Czech aircraft used for sport racing as well as a military trainer and liaison aircraft. Perhaps its biggest claim to fame was capturing the 1926 Coppa d'Italia air race.

This may be the first original kit produced by Smer, which had previously re-released some of the old Artiplast 1/50 scale aircraft kits. The kit contains 40 parts molded in light gray and clear styrene. The instructions are well done with an English version of the aircraft's history inserted. A color three-view drawing complements the box art and leaves no doubt about the model's color scheme. The four-color de-

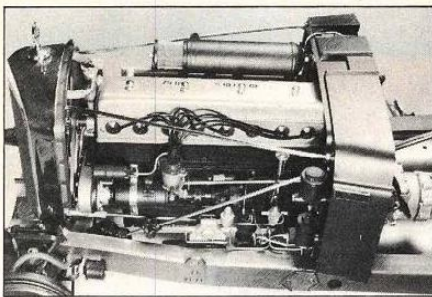
calcs are excellent, only slightly off register.

The exterior detailing is outstanding, but the interior is basic; only seats and instrument panels are included. The windscreens are thick but clear; I had to enlarge their mounting holes in the fuselage. The landing gear struts needed minor trimming to fit into part No. 14. I also had to work on the wing struts where they attach to the wing, but otherwise the parts fit well.

I painted the model according to the box art and instruction sheet drawings and used Pactra and Polly S paints. I used Liqua-plate on the engine. The model is accurate according to the dimensions provided in the instruction sheet. I spent 11 hours on the Avia and a modeler who has built a few kits should enjoy this one. It is the best Czech kit that I have built and I hope to see more from Smer.

*Dennis Moore*





**Kit:** No. K-74, 1935 Mercedes 500K-AK

**Scale:** 1/8

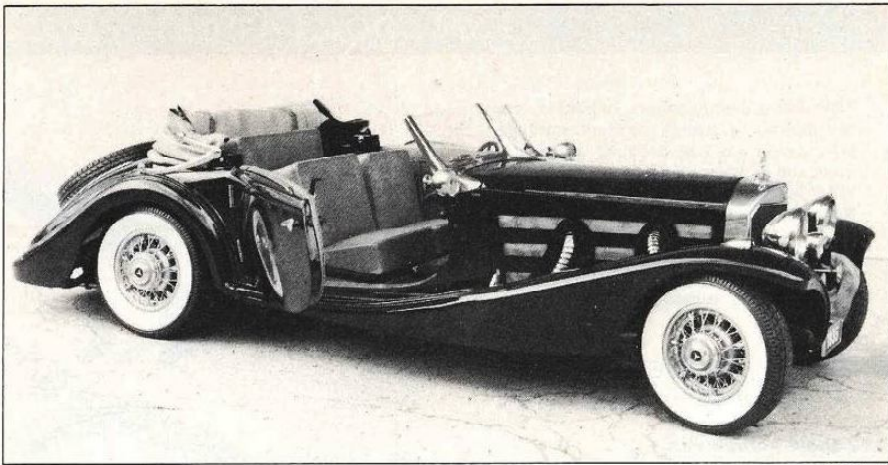
**Manufacturer:** Pocher, Via Adamello 13, 10097 Regina Margherita, Torino, Italy, imported by International Hobby Corp., 350 East Tioga St., Philadelphia, PA 19134

**Price:** \$598.00.

THE POCHER LINE of superdetailed, multimedia automobile kits is familiar to hobby shop customers, but not many buy or build them. They seem to be formidable projects, both in complexity and price.

The kit contains 2,378 parts, broken down to 503 plastic, 1,399 brass, 215 stainless steel, and 261 in either leather, iron, copper, or rubber. Groups of smaller parts are sealed in small plastic bags. Detail of the plastic parts is average, but the brass machined parts are outstanding, including small, jewel-like screws, nuts, and bolts. The leather upholstery material has stitching detail and the headlight and spotlight lenses have realistic engraved surfaces. The one-piece windshield in my kit was oversize and had been scratched. Many of the nickel-plated parts have a rough finish.

The 23-page instruction booklet contains 18 stages with 1 to 8 steps in each stage. It is filled with high-quality illustrations, some



Bob Barto

of engineering quality. I wished there were more photos of completed subassemblies.

The kit is not difficult to build if the instructions are studied carefully. I always test fit each assembly. Most of the assemblies are bolted together so mistakes are simple to correct; simply unscrew the assembly, correct the error, and rebuild. A small socket driver and 2 small open-end wrenches are included in the kit. In addition to the usual modeling tools you'll need a small ball peen hammer and jeweler's screwdrivers.

I built the wheels first; the repetition was a good primer for the rest of the kit and it cleared the workbench of some of the bulkier items. I test fit the body assembly and had to use strip styrene and putty around the hood and doors to improve the fit. Then I disassembled and painted the body.

The punch-pressed and pre-bent metal parts needed further bending to get them to fit, and I had to redrill some screw holes and

add shims to get them to align. Most of this problem was in the rear frame. The engine includes working features but even after careful filing and fitting the parts bound and wouldn't function. The plastic transmission, rear end, and exhaust system fit well. I used liquid cement for the plastic parts, Hot Stuff for dissimilar materials, and contact cement for the leather interior and canvas top.

The model scales accurately with the dimensions given in the instruction sheet. It measures 25" long, 9½" wide, and 7" high and weighs 8 pounds. I found working with the different materials a challenge, but I didn't expect to encounter the fit problems.

A modeler who has had a few years of experience building standard kits would be able to handle this one, but it's not a kit you can bang out over a long weekend. I spent most of my spare time for five months on the model! It wasn't difficult, it just took time.

Bob Burto

**Kit:** No. 15, Yak-23

**Scale:** 1/72

**Manufacturer:** K.P. (Kavozavody Prostejov), Czechoslovakia

**Price:** \$3.95.

THE YAK-23 was one of the first Soviet jet fighters to see service. Although rapidly replaced by the superior MiG-15, it served in a similar capacity to the American F-80s and FJ-1 Furies — it introduced pilots to the jet age.

K.P.'s injection-molded kit contains 35 parts molded in light gray and clear styrene. The quality of the molding is average but the level of detail is better than that of earlier offerings from this company. The easy-to-follow instruction sheet is printed in Czech, German, and English. The decals are comparable to those produced in the U.S. and include markings for Czech A.F., Polish A.F., and a Polish civil aircraft.

I had trouble fitting the cockpit assembly to the fuselage and the instructions don't mention that weight should be added to keep the model on its nose gear. The canopy fits closely to both the seat headrest and the gunsight. The canopy in my kit had some molding defects but I was able to eliminate them with sandpaper and polish.

I had to enlarge the rear of the engine compartment to install the exhaust pipe.



The optional wing tip tanks were poorly molded so I left them off. I replaced the radio mast with stretched sprue since the kit part was too thick. The fit of the wings and tail plane to the fuselage was poor; I improved on them by cutting and sanding the bonding surfaces until the fit was acceptable, then filled minor gaps with Elmer's Glue-All. I used Micro Kristal-Kleer to replace the window behind the canopy and for the landing

light lens that I drilled into the intake.

I painted the model with Liqu-a-plate and used the kit decals for the Czech A.F. aircraft. I didn't have any reference to check the scale, but the model looks good. Despite the fit problems, the kit is a welcome addition to my collection. With a little patience, a modeler with some experience can produce a fine model.

Dennis Moore

FSM



FSM invites manufacturers, importers, and distributors to submit product samples. Information on new-product announcement and review policies is available from FSM Update, FINESCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233.

FSM readers should check their local hobby shops for the items in this column before writing directly to the manufacturers.

FINESCALE MODELER staff photos by  
A. L. Schmidt and Paul A. Erler

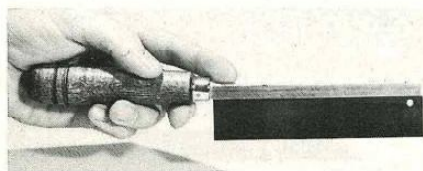
## 1/72 scale homebuilts

LS Co. Ltd. has released a double kit of the BD-5 and BD-5J homebuilt aircraft in 1/72 scale. The kit has been released in two different boxes (No. A193 and No. A194), with both aircraft in each box. The kit comes with colorful decals and landing gear and is available for \$2.50 through Squadron Mail Order, 1115 Crowley Drive, Carrollton, TX 75011-5010.



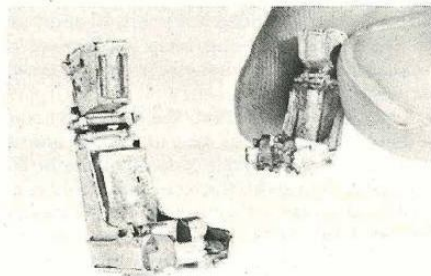
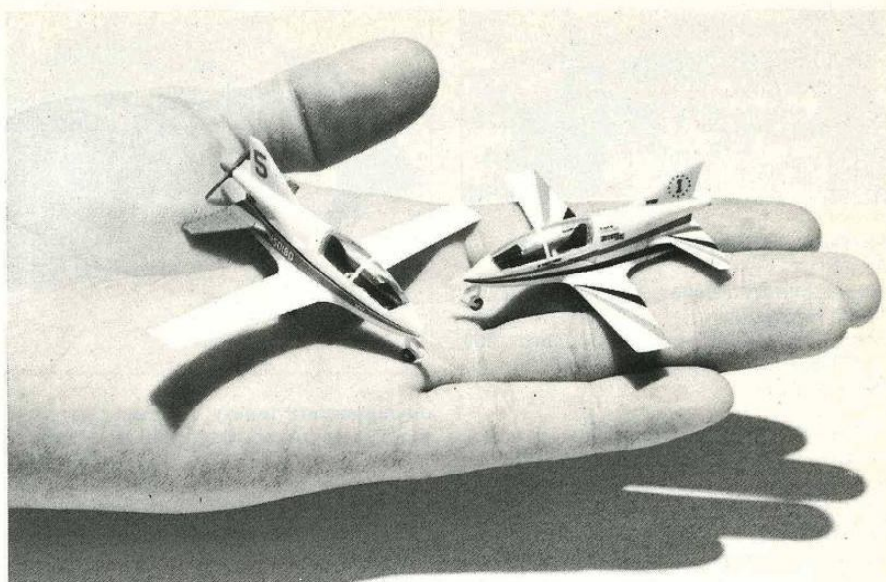
## Flexible light

L&W Enterprises, Inc., 158 South Rochester Road, Clawson, MI 48017, produces "Little Lightning" (No. 06100), a high-intensity light with a flexible shaft. The light is 11" long and can be attached to a shirt pocket with the accessory clip, leaving both hands free to work. The light operates on two AAA batteries and sells for \$11.99.



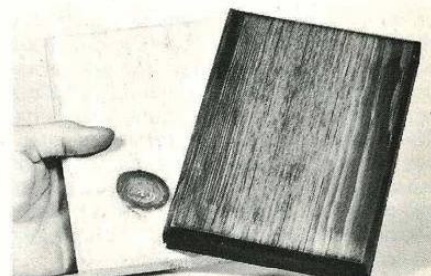
## Extra-thin razor saw

Micro-Mark, 24 East Main Street, Box 5112, Clinton, NJ 08809, offers a thin razor saw for cutting most modeling materials. The blade has 60 teeth per inch and is 5" long, 1" deep, and only .008" thick. The saw (No. 22113) costs \$6.95 plus postage.



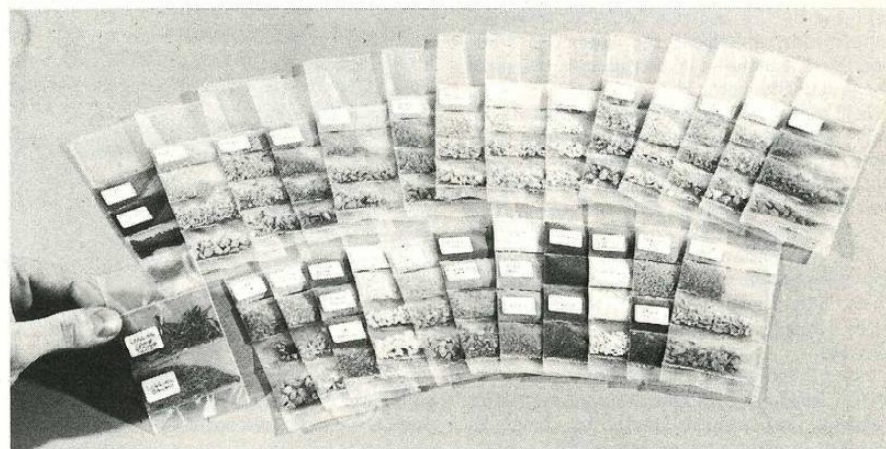
## Cast-metal accessories

Aeroclub Models, 5 Silverwood Avenue, Ravenshead, Notts. NG15 9BU, England, makes cast-metal accessories for aircraft models. The line includes ejection seats, propellers, engines, and guns in both 1/72 and 1/48 scale. Pictured above are the Martin Baker Mk. 10 ejection seats for the Sea Harrier in 1/48 (No. AEJ 408) and 1/72 scale (No. AEJ 011).



## Pine bases

Precut, finished and unfinished pine bases are available from Colonial Expressions by Gunther, 206 Grove Street, Roselle, NJ 07203. The bases measure 5" x 7", have beveled edges, and are ready to use. The finished base is stained, varnished, and has a black felt backing. The unfinished base retails for \$1.75 and the finished for \$3.50.



## Diorama materials

The Rock Quarry, 3008 Emerald Drive, Mesquite, TX 75150, has introduced an extensive line of scenic materials for dioramas. Made from natural material, each of

the multicolored gravels and sands is available in coarse, medium, and fine grades in 12-ounce packages that sell for \$1.35 plus postage. The 102-item sampler (above) is available for \$7.00.





#### 15 mm and 25 mm wargaming figures

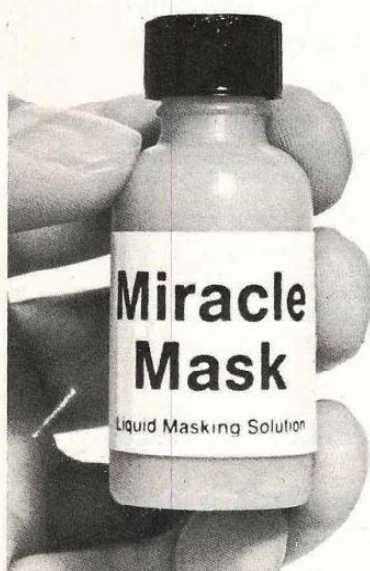
Artistic Enterprises offers 15 mm and 25 mm painted wargaming figure sets. The sets contain from 10 to 172 figures and range in price from \$15.00 to \$100.00. A complete list of figure sets with current prices is available from 9 Winston Crescent, Whitby, Ontario L1N 6Y3, Canada.

#### Mythological figure sets

Grenadier Models, Inc., P. O. Box 305, Springfield, PA 19064, has released "Monsters of Mythology" (No. 6004), a 9-piece set of 25 mm cast-metal figures for fantasy games. The set includes Medusa, Minotaur, Griffon, Mermaid, Chimera, Harpy, Sphinx, Cerberus, and Satyr. The largest figure (Griffon) is 2 3/4" long with a 3" wingspan. The set retails for \$9.95.

#### Liquid mask

A new liquid masking agent is produced by Aerolines, 5960 West Coolidge, Phoenix, AZ 85033. The water-soluble mask brushes on, cuts cleanly, and peels easily. The 18 cc bottle costs \$1.49.



#### Liquid decal film

Krasel Industries, Inc., 1821 Newport Circle, Santa Ana, CA 92705, makes Micro Superfilm which can be used as a base for painting your own decals and for resurrecting old, dried-out decals that would otherwise fracture when dipped in water. Superfilm can be applied with a brush or airbrush. The 2-ounce bottle sells for \$1.95.



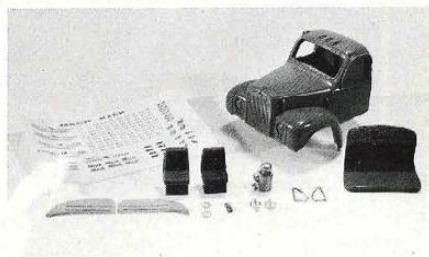
#### 1/72 scale Blue Angels SNJ

Golden Wings Enterprises, P. O. Box 9203, Wichita, KS 67277, has produced a special edition of the Testor/Hawk 1/72 scale North American SNJ in the 1948 "Beetle Bomb" scheme flown by the U. S. Navy Blue Angels. The 21-part kit comes with special decals, instruction sheet, and information pamphlet on the history of the "Beetle Bomb." The kit sells for \$3.00 plus \$1.00 postage.



#### Miniature lumber

Northeastern Scale Models, Inc., P. O. Box 425, Methuen, MA 01844, makes wooden scale lumber, siding, and structural shapes ideal for scratchbuilt buildings and diorama details. Northeastern's free catalog lists over 1,000 items.



#### 1/25 scale truck conversion kits

American Industrial Models, P. O. Box 165, McConnellsburg, PA 17233, produces 1/25 scale truck conversion kits and accessories that are compatible with existing plastic truck models. Shown above is the Mack B-61 standard cab (kit No. 8A). The kit, cast in fiberglass resin and white metal and including self-adhesive vinyl decals, sells for \$25.00. A complete catalog is available for \$5.00.



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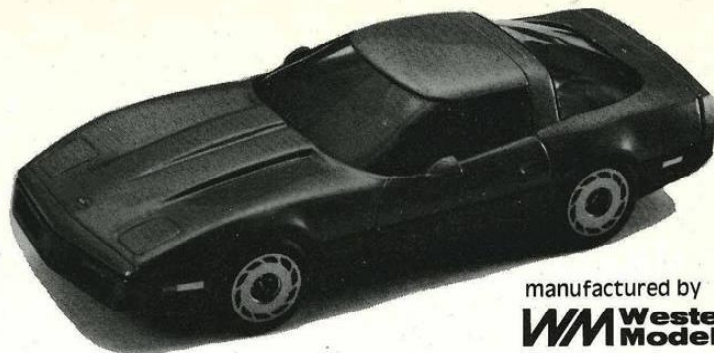
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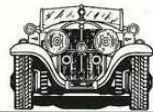
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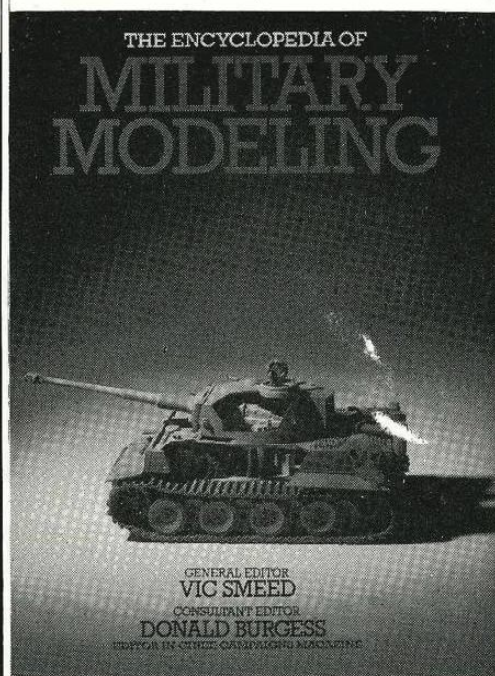
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## FROM THE EDITOR

# To weather or not to weather?

THIS ISSUE OF FSM features five articles related to painting and finishing techniques, and not surprisingly two of them deal mostly with weathering, that is, adding evidence of wear and tear to your models. I've run into arguments for and against weathering, and the pros and cons are worth mentioning here.

Vocal proponents of weathering argue that wear and tear are part of the finish of the real thing, and that leaving off faded and chipped paint, rust, smoke stains, and so forth would be as serious as painting the model the wrong color or putting the markings on upside down. I've got to agree, especially if your goal is to build a replica of a particular aircraft, vehicle, ship, or other subject at some particular point in its service history.

On the other side of the coin, those who prefer pristine models point out that weathering covers up their craftsmanship. "What good is it to take great pains in building and painting," they say, "if you're going to hide your results with stains and grit and grime?" They've got a point, too, and an immaculate model can be every bit as impressive as one that's covered with dirt and battle scars.

Sometimes whether you weather is determined by the type of model you are building: I've seen few weathered autos or airliner models, and on the other hand I can't remember seeing armor models or dioramas of any kind that weren't weathered at least a little. One thing is for sure: You can't have it both ways. You can't, for instance, build a convincing diorama that's half weathered and half like new, nor can you weather one side of an aircraft and not the other (though somebody probably has).

There's no need to settle the debate in favor of one side or the other, because there's plenty of room for both opinions. There's also room for both types of models between the covers of FSM, and in the months to come you'll find both points of view and both types of models here.

*Bob Hrych*

Editor

FineScale  
**MODELER**

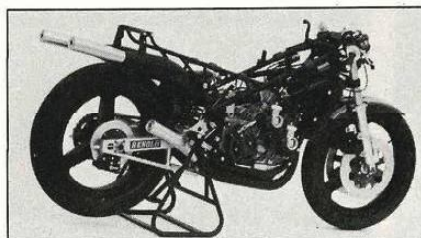
## NEXT ISSUE

### FEATURES



Me 163 Komet in-flight diorama. Carl McLaughlin.

In the May/June issue of FSM, you'll find a fascinating story on building an in-flight diorama of an Me 163 Komet. The article goes into detail on how to achieve multi-colored smoke and flame effects, techniques you'll be able to use even if your project isn't a rocket-powered aircraft. You'll find FSM taking a hard look at lighting and animation effects in "The ABC's of LED's," an article describing how to use light-emitting diodes in your models. Figure painter Joe Berton will return with "Murat in Egypt," a 1/32 scale mounted conversion based on Historex and Airfix figure parts and an inexpensive toy horse.

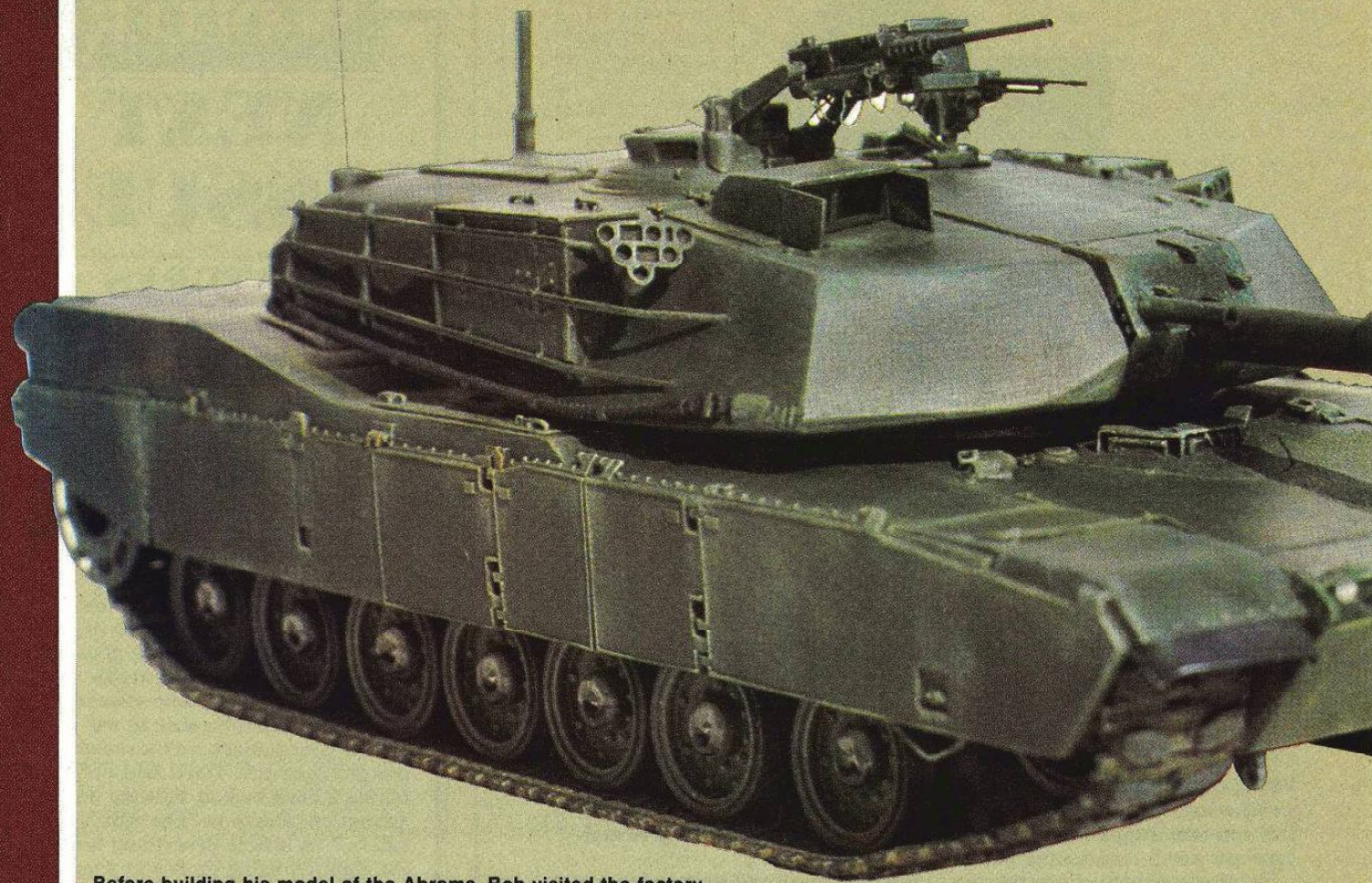


Superdetailing motorcycles in 1/12 scale. Paul Budzik.

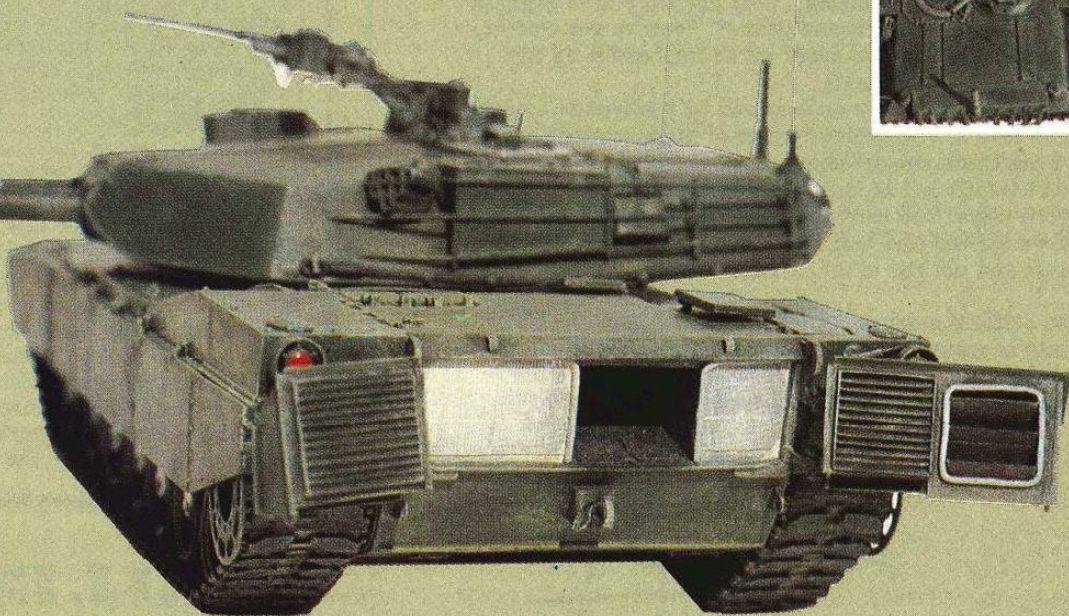
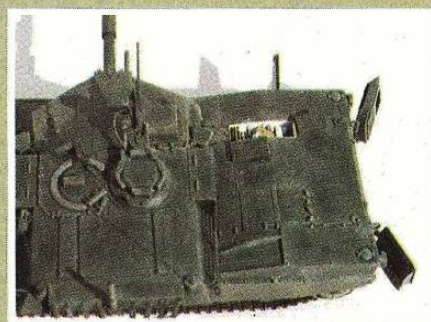
Also in May/June FSM, modeler Paul Budzik will offer tips and techniques for superdetailing 1/12 scale motorcycles. FSM will delve into the history of plastic modeling with an article by Smithsonian Curator of Aircraft Robert Mikesh on WWII recognition models and we'll have our first "FSM Showcase Special Feature," a remarkable scratchbuilt 1/32 scale Fw 190D!

**ALL IN  
MAY/JUNE  
FSM!**



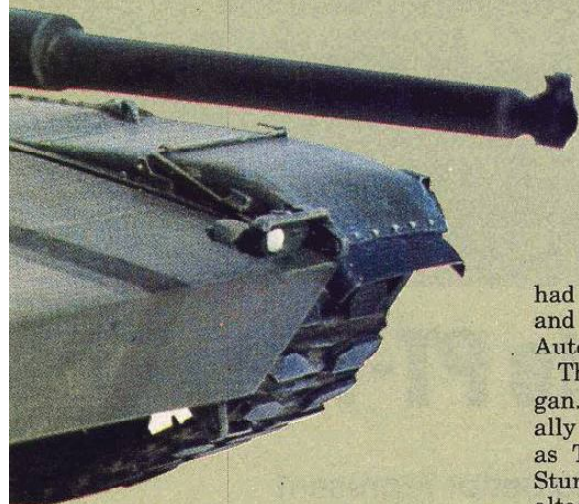


Before building his model of the Abrams, Bob visited the factory at Lima, Ohio, where the tank is manufactured and took more than 200 photos to use as references. The rear doors are hinged and open to reveal the radiators and exhaust duct; those on the engine deck open to show the battery compartments. The model is lightly weathered with black and red washes and dry-brushed earth-tone paints to represent a recently manufactured Abrams that has been in service for a few months.





# Robert Skurda's scratchbuilt 1/35 scale M1 Abrams Main Battle Tank



**A**METHODICAL APPROACH to research and painstaking attention to detail helped Robert Skurda of Detroit, Michigan, build a 1/35 scale model of the M1 Abrams Main Battle Tank that won best of category and best of show awards at the 1982 Region IV IPMS Convention. The model has also been featured in *Landmarks*, the employee magazine published by General Dynamics' Land Systems Division, which now manufactures the M1.

Before starting construction, Bob visited the tank factory at Lima, Ohio, shot more than 200 photos of M1s, and took measurements from tanks in production. He made his own 1/35 scale drawings and drew full-size patterns for each panel. He then began building the model, which represents a tank of the second production year, hull number 237, turret number 241.

Bob built the turret and hull floor from Evergreen\* .020" sheet styrene and used .040" stock for the hull sides and upper deck. He reported that "roughing out the model was fairly simple and straightforward. The flat views were transferred to sheet styrene and cut out. The inside edges were beveled and the panels were glued together with Testor liquid plastic cement. After they

had dried the joints were filed smooth and any gaps were filled with Bondo Automotive Glazing and Spot Putty."

The search for detail parts then began. Bob studied dozens of kits, eventually choosing parts from kits as diverse as Tauro's World War One German Sturmpanzer A7V and Tamiya's M48; altogether he used pieces from nine kits. Even so, many assemblies had to be redone or built from scratch. Bob wrote, "The most tedious step was assembling the suspension and tracks. The road wheels from two Monogram M48s were modified by removing the ten molded-on lug nuts and adding 18 new ones taken from Tamiya's M60 road wheels. This was not difficult, but it had to be done 16 times."

The tracks are from Tamiya's M60, with the track connector pins shortened .060" per side and with the molded pads sliced off. Bob replaced the pads with 80 sets of pads cut from Evergreen strips held in a jig built just for this task.

To simulate welding seams, he first marked their locations with a felt-tip pen, then placed masking tape on both sides of the seams and filled the gaps between the strips of tape with putty. After the putty dried, he removed the tape and carved the putty to resemble welds.

Most of the machine guns, mounts, and hatch rings, as well as the smoke grenade launchers, came from armor kits, but Bob made many other details from HO scale model railroad parts. For example, the skirts, hull, and turret have more than 100 Grandt Line\* nuts and there are 18 wire lift rings on the rear of the turret.

Viewers seem most interested in the engine deck. Every compartment is

boxed in and detailed. Again Bob used parts from many sources — the batteries are lengths of Plastruct tubing glued to sheet styrene, the cables are stretched sprue, and the oil-cooling fans are HO scale diesel roof fans.

According to Bob, "The most difficult individual items to make were the rear grille doors. The doors were first boxed in, then each individual louver was cut out and glued in place separately. These doors are hinged and can be opened to reveal the engine exhaust duct and radiators."

After comparing paint chips from the full-size tank to styrene strips painted with several manufacturers' dark greens, Bob decided that Testor Model Master FS34079 Dark Green provided an exact color match. He diluted the paint 50 percent with Testor No. 1789 Airbrush Thinner and airbrushed this mixture onto the hull and turret. The tires, tracks, and machine guns received a coat of Model Master FS37038 Flat Black thinned 50 percent, while the interior was airbrushed with Model Master FS17875 Insignia White, also thinned 50 percent.

After these paints dried, Bob applied Floquil Crystal-Cote (RR4), followed by a sealing coat of Floquil Flat Finish (RR15). In order to bring out details, he dry-brushed the model with Dark Green lightened with Model Master FS36495 Light Gray.

Gentle weathering created additional texture. Bob applied a wash of flat black paint and thinner around the filler caps, access panels, and the rear grille doors and a thin rust-colored wash on the center of the right grille door. He completed weathering by dry-brushing on several shades of green, yellow, gray, and brown.

Finally, he filled the vision blocks with Weldbond white glue to simulate clear glass.

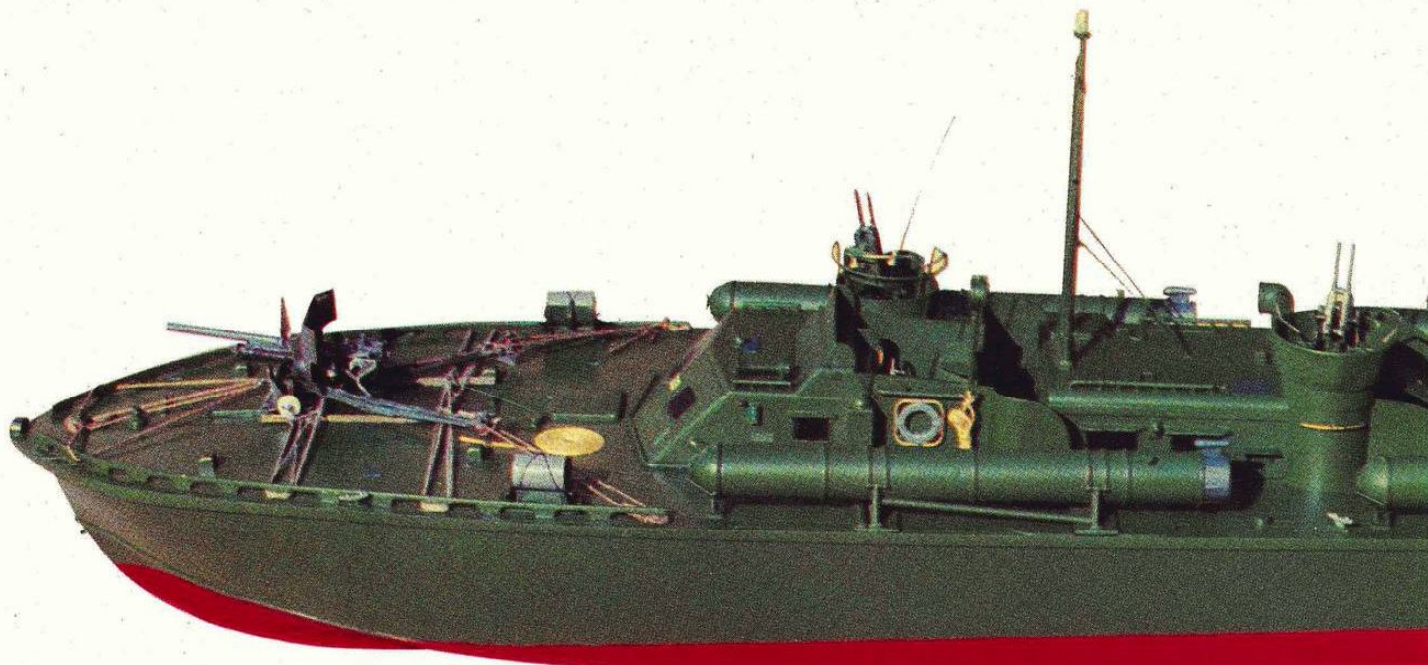
Bob reported that "this project was more than enjoyable, educational, and challenging — it was very rewarding. The result is an award-winning model that captures both the look and feel of the real tank." The Abrams is now on display at the Squadron Shop in Detroit, so stop by to see it the next time you're in the area.

**FSM**

\*Evergreen Scale Models, 1414 127th Place, N.E., Suite 107, Bellevue, WA 98005.

\*Grandt Line, 1040 B Shary Court, Concord, CA 94518.





# Building an accurate PT-109

Upgrading the Lindberg 1/32 scale kit to better represent  
Lt. John F. Kennedy's boat on August 2, 1943

BY GIFFORD HAMILTON

**I**N THE EARLY MORNING hours of August 2, 1943, an Elco 80-foot PT boat skippered by Lt. John F. Kennedy was patrolling in Blackett Strait near Kolombangara Island in the Solomons when it was rammed and sunk by the Japanese destroyer *Amagiri*. Kennedy and two other equally courageous officers rallied the survivors and swam with them to an island about three miles distant. Several days later, the men made contact with native scouts and an Australian coast watcher who arranged for their rescue.

When I decided to build the Lindberg 1/32 scale kit (No. 812) of an Elco 80-

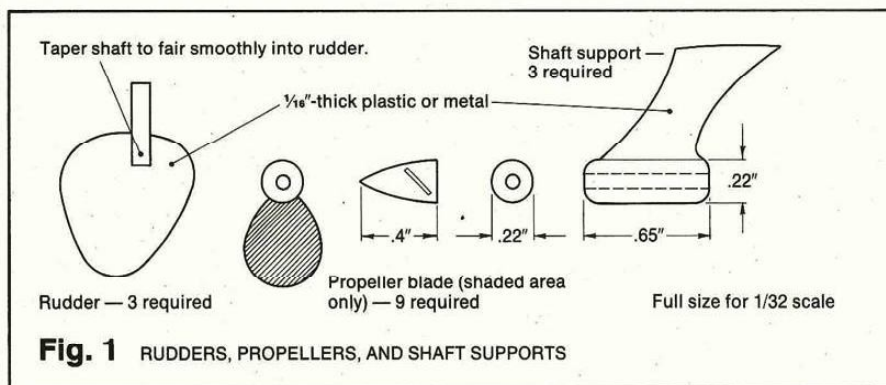
foot PT boat, I thought it would be fun to see how close I could come to replicating PT-109 as she appeared immediately before the wreck. The job broke down into two parts — first, I had to correct numerous errors and omissions in the Lindberg kit, and, second, I had to find out what alterations, if any, had been made to PT-109 from the time she was delivered by the Elco shipyard in Bayonne, New Jersey, in 1942 until the sinking.

Using the references listed below, I determined that PT-109, though somewhat weatherworn, was still pretty much in stock condition on August 2, 1943. The crew had repainted the boat forest green in May 1943 and on August 1 had lashed a 37 mm antitank

gun with its wheels removed to the foredeck.

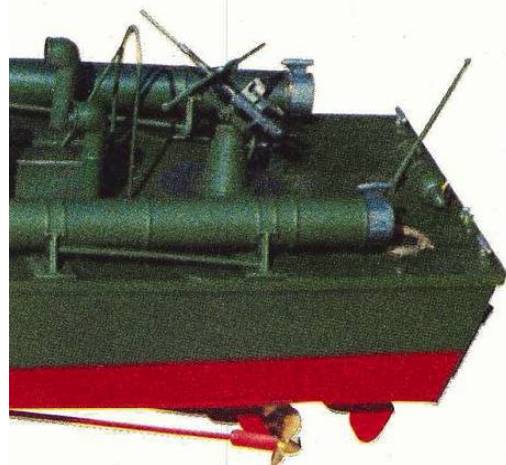
I then built the model shown in the photos — but be aware that there are discrepancies between the model and the drawings. The drawings are more accurate, so use them when building your model. For example, my model shows exposed deck planking, though I now believe that the decks were covered by canvas. Also, in some cases I used kit parts for items that I would now scratchbuild — I'll mention these as we go along.

**Building new propellers and rudders.** The Elco boat was powered by three Packard V-12 engines mounted so that the center engine drove its shaft in-line and the outer engines each used a V-drive. The Lindberg kit includes parts for an electric motor and oversize propellers. Seal all holes in the hull for the motorized version with pieces of sheet plastic cemented to the inside of the hull. Then discard the kit parts and scratchbuild three smaller propellers, shafts, supports, and rudders, Fig. 1. I couldn't find any photos of the bottom of an 80-foot Elco, so the sizes in Fig. 1 are based on educated guesses but should be pretty close. Curve each blade slightly before attaching it to the hub and mount it at a small angle. The shafts may be aluminum, brass, or plastic tubing.

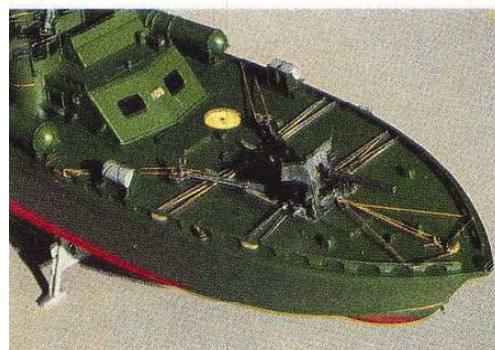


**Fig. 1** RUDDERS, PROPELLERS, AND SHAFT SUPPORTS





This painting by the author shows a Pacific-based PT boat in 1944 or 1945. She has a 37 mm T9 cannon on the foredeck, additional .50-caliber machine guns, much lighter and far more reliable Mark XIII torpedoes than the Mark VIIIs carried earlier, and a 40 mm cannon at the stern. She is equipped with radar. If 109 had been so fitted, it's unlikely she would have been rammed and sunk.



In 1/32 scale, the 80-foot PT boat is 30" long, big enough to make an impressive addition to any model collection. PT-109's crew added the 37 mm antitank gun in an effort to increase the boat's firepower, but never had a chance to use the weapon.

Prepare these parts now if you wish, but don't install them until just before final assembly.

**Attaching the deck to the hull.** I strongly recommend that you don't use the kit deck. I did and had no end of problems filling cracks, slots, and other openings. First install transverse ribs in the areas where the forward cabin (the chart house and cockpit) and the aft cabin (the dayroom) will be located. Shape the ribs so that the center of this portion of the deck will bow up about  $\frac{1}{8}$ ", producing a realistic camber. The camber should diminish as you work fore and aft so that there is none at the bow or stern.

For strength, use tube glue when installing these ribs and when joining the deck to the hull. Be sure to use lots of clamps. Wooden clothespins with their noses cut square to allow them to

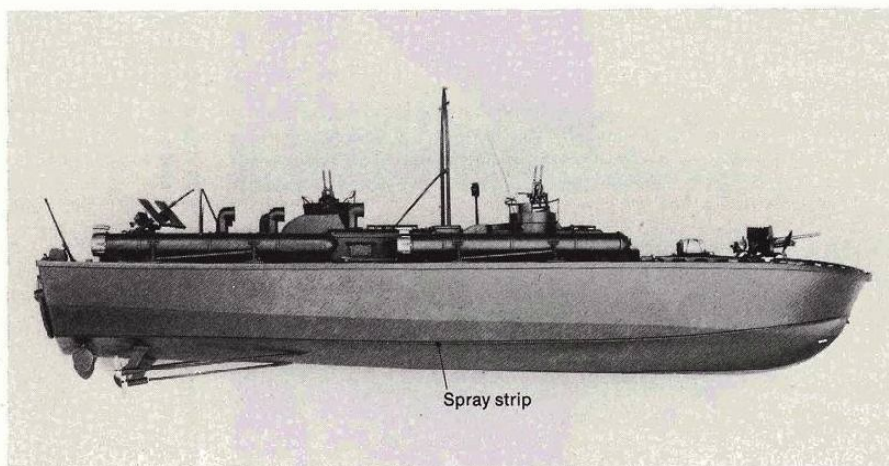


Fig. 2. Add a spray strip at the chine where the hull sides meet the bottom.

butt against the hull are excellent here.

After the deck is dry, fill the prop shaft holes with putty and sand smooth the little locating bumps on the hull.

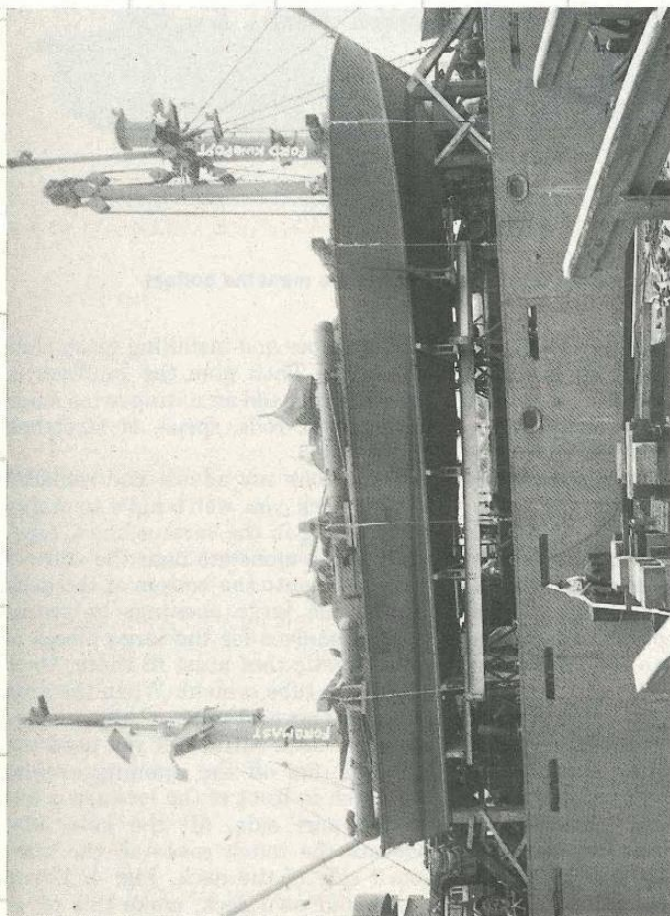
**Spray strips, exhausts, and fore-deck details.** At the intersection of the hull bottom with the sides, the chine, add spray strips of  $\frac{1}{8}$ "-wide,  $\frac{1}{16}$ "-thick plastic the entire length from bow to stern on both sides of the hull, Fig. 2. (Do not carry the spray strip onto the transom.) Sand the bottom edges of the strips until they match the flare of the hull bottom.

Butterfly valves in the exhaust pipes passing through the transom could be opened for direct discharge, producing increased engine power but more noise, or closed, directing the exhaust gases through mufflers and into the water for less noise with some loss of power. Modify the kit parts by drilling out the

exhaust pipes and installing scrap plastic valves. Then glue the mufflers to the stern and add actuating arms made from plastic rods, sprue, or stretched sprue, Fig. 3.

If you took my advice and replaced the kit deck you won't have to worry about filling in the various holes, especially those monsters near the stern. I glued tabs onto the bottom of the deck around the large openings to act as support shelves for the large pieces of sheet plastic that must fit there. Once again, use tube cement. When the glue dries, add several coats of filler to create a flat deck surface. If you used the kit deck, file off the coaming around the hatch in front of the forward cabin on the port side, fill the hole, and relocate the hatch cover on the starboard side of the deck, Fig. 4. If you made your own deck, make this cover





This photo of PT-109 was taken in August 1942 as one of a series of pictures illustrating how to lash a PT boat to the deck of a freighter.

National Archives, 19-N-33165



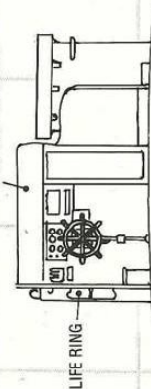
U. S. Naval Institute, 98730

PT-109, probably soon after commissioning in 1942. In May 1943, shortly after Kennedy became her skipper at Tulagi in the Solomons, the boat was painted forest green.

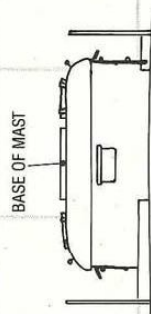
### PT-109

- Manufacturer:** Elco Naval Division of Electric Boat Company  
**Power plant:** Three 1,200 horsepower Packard Marine 4M-2500 V-12 engines  
**Dimensions:** Length — 80' 0" Maximum beam — 20' 8" Draft: 5' 6" to propeller tips  
**Displacement:** Approximately 38 tons (armed)  
**Performance:** Maximum speed — 43 knots. Range — 500 nautical miles at 2,000 rpm and 35 knots.  
**Armament:** (August 2, 1943) 4 Mark VIII torpedoes, 1 Oerlikon 20 mm M4 antiaircraft gun, 4 .50-caliber Browning machine guns in twin mounts, 1 37 mm antitank gun lashed to deck with wheels removed, 2 depth charges.

WINDSHIELD REPLACED WITH PLYWOOD OR METAL

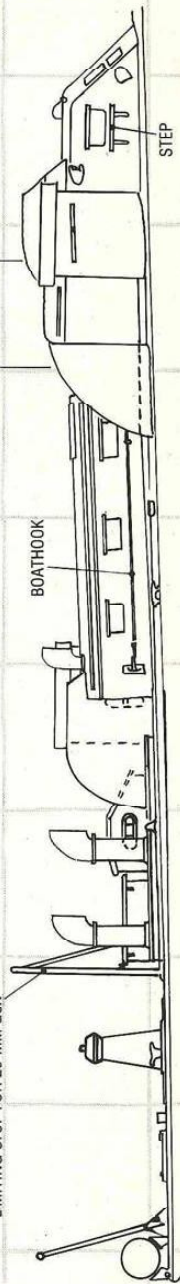


SECTION A LOOKING FORWARD

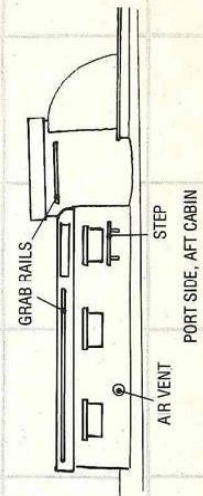


SECTION B LOOKING AFT

LIMITING STOP FOR 20 MM GUN



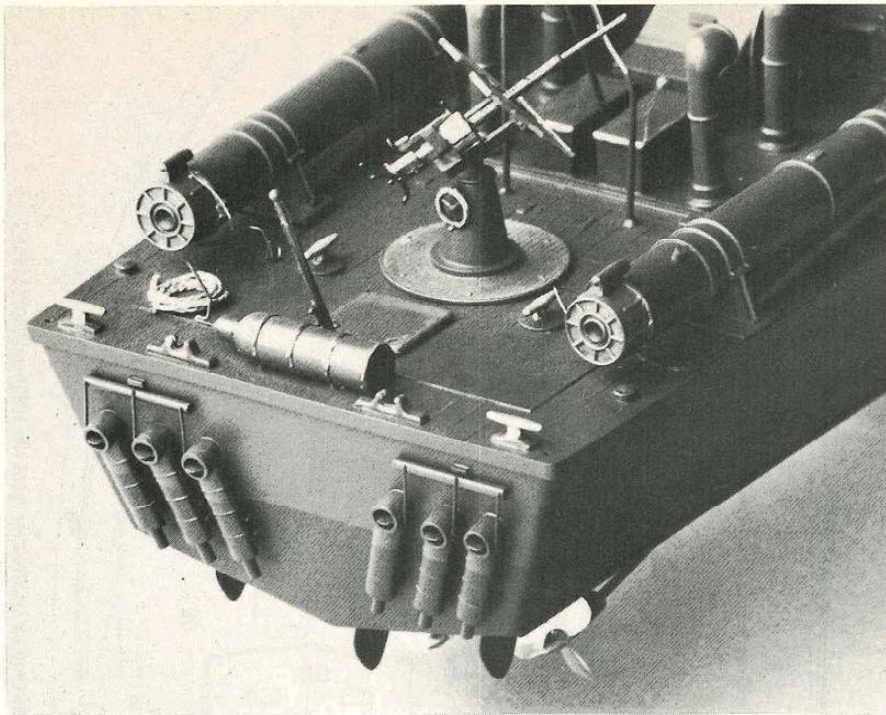
STARBOARD SIDE SHOWN WITH TORPEDOES REMOVED







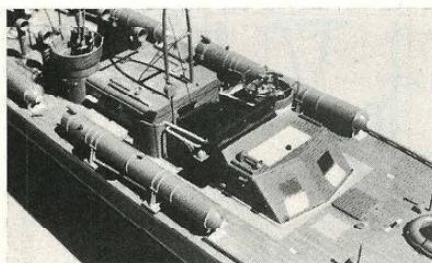




**Fig. 3. Hollow out the exhaust pipes, install sheet plastic butterfly valves, and build the valve actuating arms. The gas cylinder behind the flagstaff is the smoke generator, which was held to the deck with three sheet metal straps.**

from sheet plastic, taking dimensions from the top-view drawing on page 25 and multiplying by three. If you're working with a scratchbuilt deck, install another hatch cover on the fore-

deck as shown in the drawing. Be sure to attach both covers with the hinges facing forward so that the cover, when open, would act as its own spray shield. Add hatch hold-open devices and refer



**Fig. 4. If you used the kit deck, move the hatch cover just forward of the cabin from the port side to the starboard location shown here.**



**Fig. 5. Shorten the aft end of each footrail by  $\frac{7}{8}$ ". Note also that the kit bow chock with a light has been replaced by a sheet plastic oval chock.**

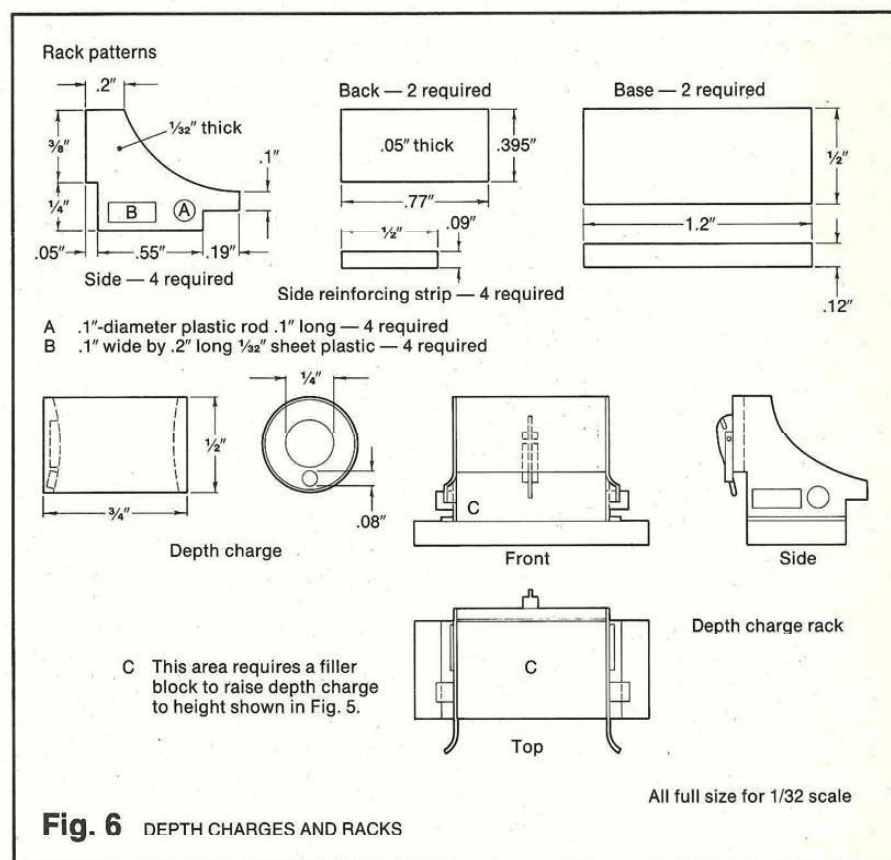
to the top-view drawing for the locations of other details.

Although they show in my photos of the uncompleted model, do not install the life raft, lifeline stanchions, or jack staff; these probably weren't on board the night the boat went down. As I mentioned, I got carried away when scribing the deck planking. Individual planks can be seen in some photos, but not in others, which leads me to believe that the planks were covered with light canvas — under some lighting conditions the outlines of the planks would show; in others the surface would appear unbroken. In any case, scribe lightly. Don't forget to scribe plank ends in various places.

Shorten by  $\frac{7}{8}$ " the aft ends of the forward safety footrails, which run parallel to the curvature of the bow on both sides of the boat, Fig. 5.

There are several deadlights (glassed areas) in the deck. I simulated these with pieces of  $\frac{1}{32}$ "-thick plastic cut to  $\frac{3}{32}$ " x  $\frac{7}{32}$ ". Unless you have masochistic tendencies I don't recommend cutting the holes.

From this point I'll mention only those details that aren't obvious in the drawings or that require some explanation. One of these is the bow chock — on PT-109 the original chock included a light, but the light was probably removed, so I made a new chock from thin plastic  $\frac{1}{4}$ " wide, rolled it into an oval, and glued it in place, Fig. 5.





Install the forward deck ventilators with the open ends facing aft, as shown in the side-view drawings.

**Depth charges, racks, and torpedo tubes.** One photo of PT-109 operating off Guadalcanal shows a depth charge mounted in a rack several feet in front of the forward torpedo tube on each side of the boat. Figure 6 contains drawings of the depth charge and rack and full-size patterns for the rack. Locate the racks in either of the positions shown on page 25.

The torpedo tubes normally were parallel to the boat's center line but were cranked out for firing so that the forward end faced outboard. The tube pivoted on its aft support and was turned by a hand-operated lead screw. A stop on the deck at the forward end of the tube limited the amount of travel. Figure 7 shows full-size patterns for the stop and its tube-mounted fitting. Make and install these parts, then add reinforcing deck plates at the aft pivots.

The kit tubes are reasonably accurate in size and shape but lack detail. I added a small  $\frac{1}{8}'' \times \frac{3}{32}''$  plate to the top of each tube just forward of the fifth raised ring. Another  $\frac{1}{16}''$ -long part, made from  $\frac{1}{16}''$  rod, was added to the aft section of the tube. I simulated the firing cables that go into the deck from the black powder chamber atop the end of each tube with brass wire, then represented the torpedo training gear with a piece of thin plastic rod mounted

transversely to the base of the forward tube support. Figure 5 shows the locking device at the front of each tube — it's a triangular piece of sheet plastic with a piece of brass wire extending from each corner to the tube.

**Afterdeck details.** Before installing the smoke generator, Fig. 3, drill a small hole in the valve end and install a discharge tube made of brass wire. Also add the triangular supports for the flagstaff, Fig. 8. You may also add a tie-down cleat to the flagstaff just above the smoke generator. After installing the various cleats and chocks in their proper locations, make the limiting rail for the 20 mm gun from brass wire. This rail and similar rails for the .50-caliber Brownings prevented overzealous gunners from shooting up their own boat in the heat of battle.

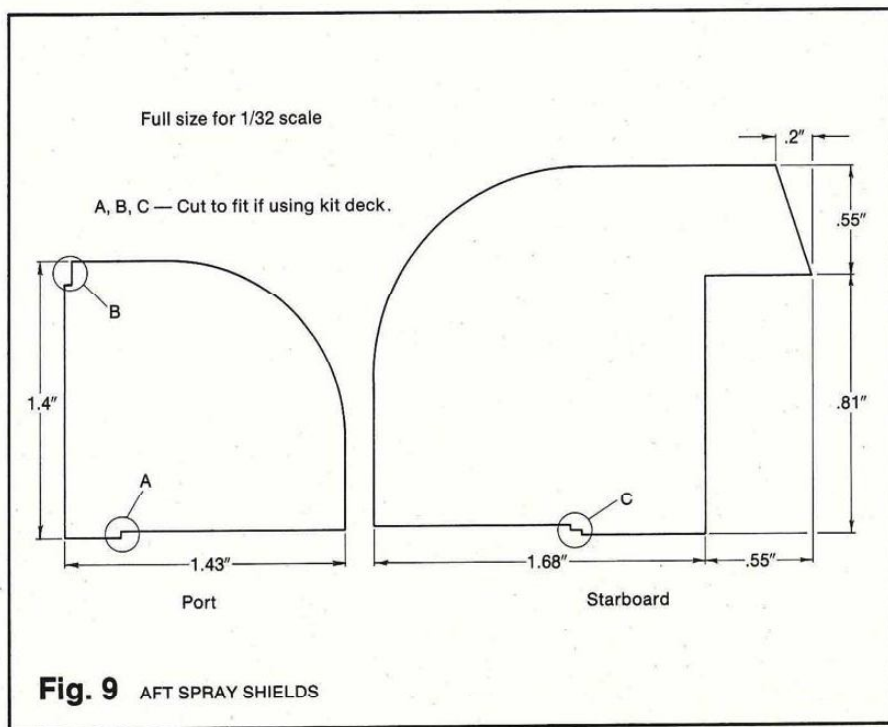
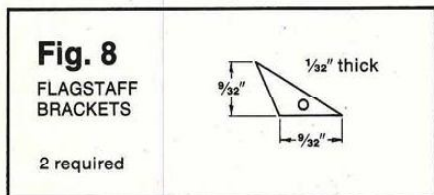
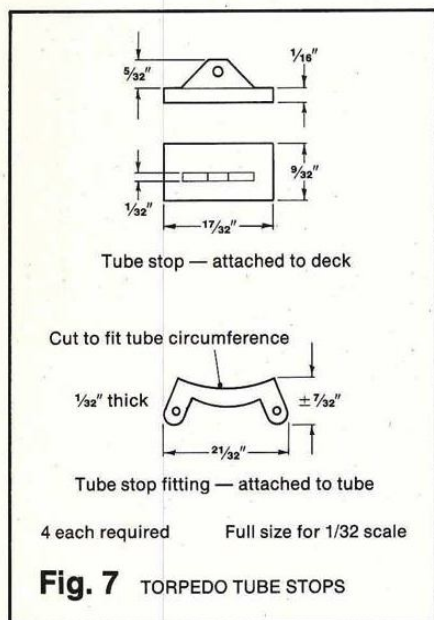
Modify the kit parts for the aft ventilators until they match the drawings, then use these as patterns for additional ventilators. Install the ready ammo boxes for the 20 mm gun at this time.

I represented the many fuel filler openings, vents, and drains on the deck with  $\frac{1}{4}''$  disks of thin plastic. The throttle push housing was made by laying down a strip of  $\frac{1}{32}''$ -thick plastic and then gluing three plastic rods on top to simulate three throttle housings. The base piece of plastic is  $\frac{1}{4}''$  wide and should extend all the way to the forward gun tub. The kit gun tub location is wrong so check this before cutting the rod and base material to length. As an aside, the hatch cover behind the starboard spray shield was probably flush and should be scribed.

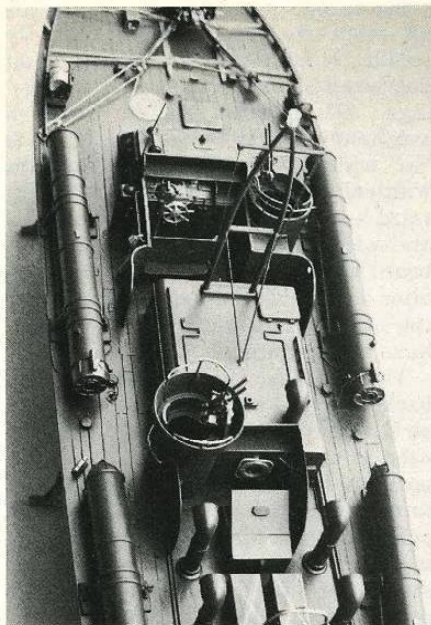
**Aft cabin.** The modifications to the aft cabin are pretty simple. Start by cutting windows in the fore and aft bulkheads as shown in the detail drawings. All windows should have an overhanging strip of  $\frac{1}{32}''$  plastic cut to  $\frac{3}{32}''$  wide by slightly more than the width of the window. Lengthen the forward end of the port grab rail by  $\frac{1}{2}''$  and add a short rail behind the starboard kit rail. Position the cabin ventilator as shown on the drawings. Leave the boathook off until it and the boat have been painted.

The kit mast is okay but add wire backstays and a mast support bracket on the aft end of the cabin roof; this was used to secure the mast in its stowed position. PT-109 didn't have radar, certainly a contributing factor in her abrupt demise. Make the torpedo training gear cranks that turned the lead screw from wire and their holders from scrap plastic. Add a gun tub step on the port side of the cabin and you're finished here.

Cut out the floor before installing the gun tub, leaving a  $\frac{1}{4}''$  ledge around the tub. Use the kit backrest if you wish but remove all the stuff that connects it to the guns. I used only the part that is directly connected to the guns for a support bracket and discarded the horizontal piece of the combined backrest and gun support. Attach the gun support to the remaining lip. The limit rails for the aft guns are easy if you leave the simulated canvas on the tub: I used brass wire and epoxy. Also add a grab rail to the side of the gun tub as shown in the detail drawings. After you install the gun tub you can add the







**Fig. 10.** The cockpit includes a wheel, throttles, and instrument panel. When rammed, the boat was sliced in half just behind the cockpit. Kennedy, at the throttles, was thrown against the aft cockpit wall, badly injuring his back.

splash shields, Fig. 9, which are not provided in the kit. Hold off on the life ring until it and the boat are painted.

**Cockpit details, forward cabin, and 20 mm gun.** Discard the oversize kit wheel and build a smaller wheel, using the detail drawing and Fig. 10 as guides. The full-size wheels had glass or plastic handles on the end of the spokes.

Figure 11 shows the dimensions of the forward cabin. Use these dimensions to modify the kit parts. Note that the kit's forward gun tub is incorrectly located, so clean off the raised ring on the deck and cut the tub so that it will fit in the proper location. Note also that the starboard splash shield is curved when viewed from the top. Scrap plastic, cut to fit, can fill the area behind the tub and in front of the splash shield. I used  $\frac{1}{32}$ "-thick plastic to simulate what was probably a maintenance hatch cover just behind the binnacle.

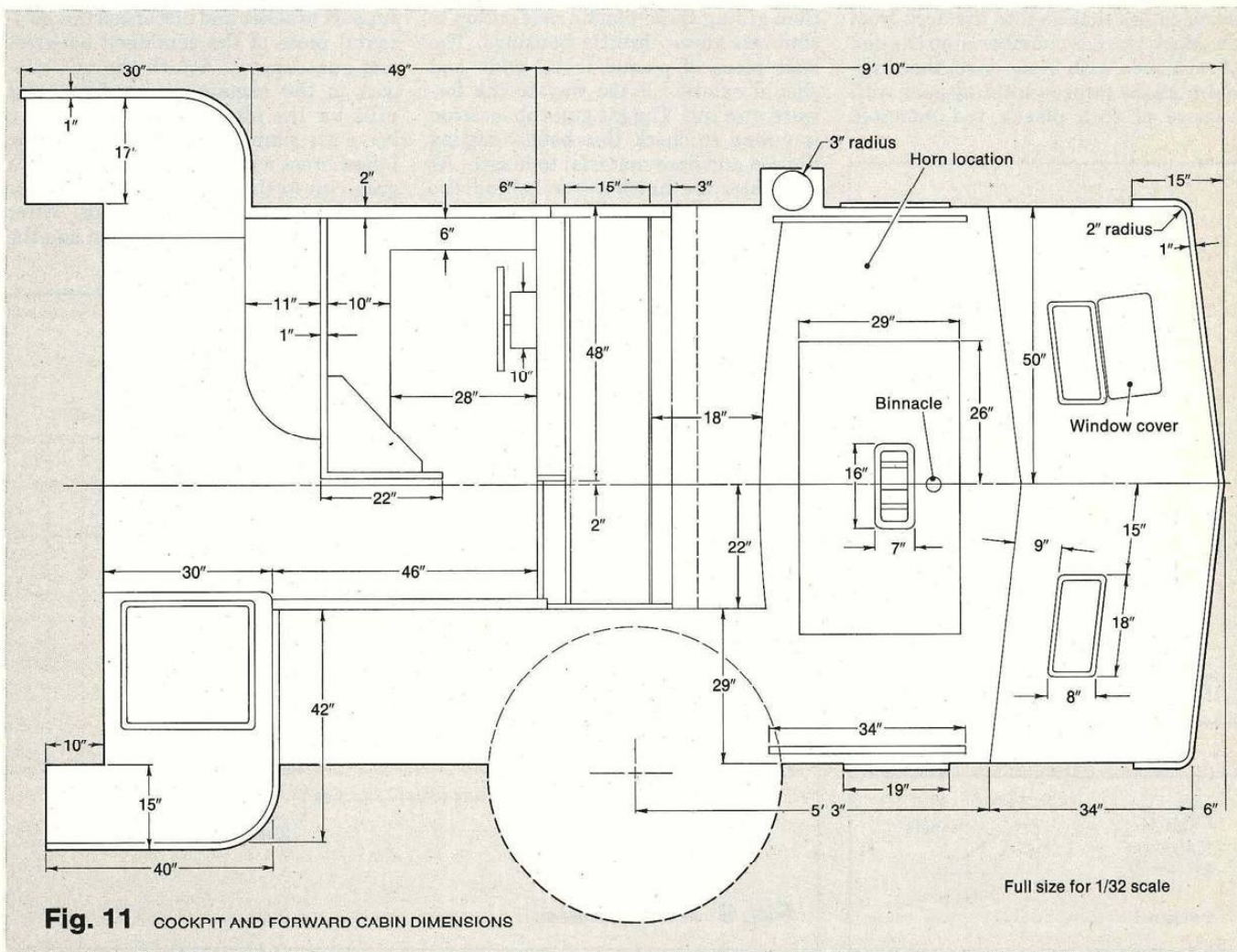
Not until after I'd painted the model did I realize that the cabin side windows were in the wrong location, so profit by my error and reposition them according to the drawings. I recommend filling the kit windows first and

then cutting out the proper ones. The windows on the forward cabin bulkhead are okay and all that has to be done here is to add the protecting plates which are the same size as the windows and are hinged at the bottom of the window. Although I imagine these were in the closed position on the night PT-109 was lost I left them open for more interest.

The 20 mm gun at the stern is a pretty easy installation. Add a few details to the kit parts, then glue the gun and its pedestal mount in place, Fig. 3. If you haven't already done so, install the four deadlights in this area.

Now mount the rudders, screws, and shafts and prepare the model for painting.

**Painting.** Her crew painted PT-109 forest green in May 1943, almost certainly leaving the usual subdued red below the waterline. (The boat had been gray.) The forest green was probably fairly dark because it was meant to camouflage the boat against a jungle shoreline. I used the new Testor Model Master Medium Green spray paint (FS 34102) for the top and just good old red below the waterline. The crew probably applied the paint with brushes, but I





don't know how the effect of hand-brushed paint could be simulated on a model.

I painted the fuel filler caps red, the deadlights blue, and the screws brass. Go easy on weathering. Not only does PT-109 appear to have been in reasonably good shape, but moderate weathering gives a more pleasing effect on a boat model. I confined weathering to a few foot and hand wear marks on metal parts.

The only marking I can verify is the number 109 on the forward cabin bulkhead. The 1942 photo on page 24 shows the number 109 just aft of the cockpit and another picture in the same series shows the number on the rear of the pedestal mount for the 20 mm cannon. However, I doubt that the crew bothered to repaint these numbers after painting the boat green.

**37 mm antitank gun.** On the afternoon of August 1 the crew lashed an old 37 mm antitank gun with its wheels removed to the foredeck. The gun was supported by two 2 x 8s, which were also lashed in place. That and the fact that the gun's breech was manually operated is all we know about the weapon. The only kit I could find was the Testor M1 antitank gun (No. 781). I know it's a 57 mm but it's also 1/35 scale. Converted to 1/32 this brings the caliber down to 52 mm. That's still off a bit, but in 1/32 scale that means a difference on the model of about half a millimeter. Because it is the only kit available and is reasonably close to scale, I think you're on firm ground unless you want to scratchbuild a 37 mm — and that assumes you know which 37 mm to model. Don't use the 37 mm T9 cannon that was mounted on later boats, as shown in the painting on page 23 — the T9 came from the P-39 fighter and is a much different type of gun.

In spite of the Lindberg kit's limitations I'm happy as a clam to have any boat kit in this scale. As you've seen it isn't hard to upgrade the kit to a respectable standard. In fact, if you are the type who likes to spend 2,000 hours on a project there's no end of super-detailing you can add to the model. Good luck!

**FSM**

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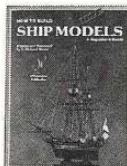
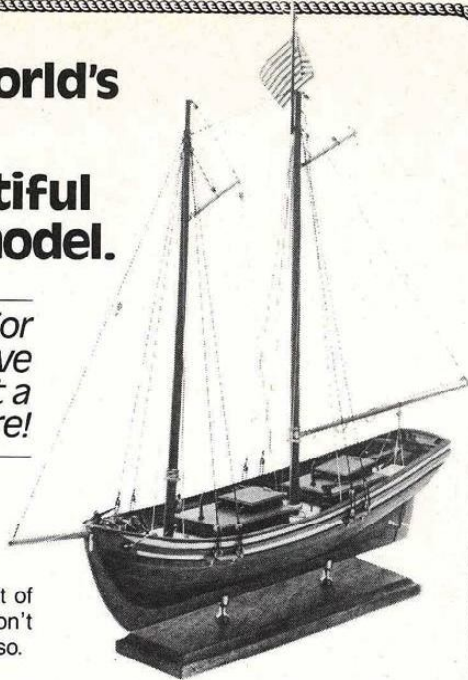
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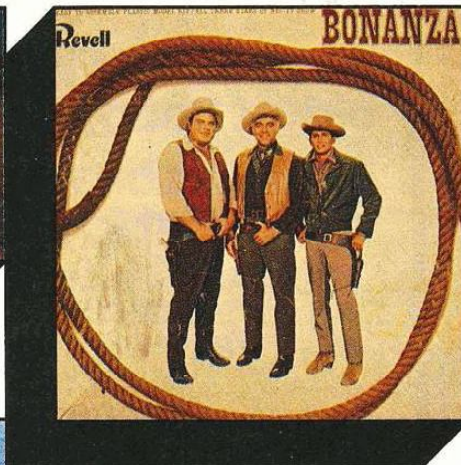
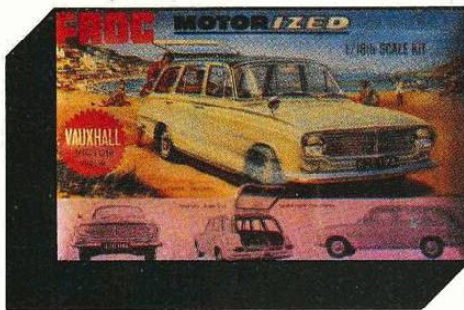
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# Kit collecting

A hobby within a hobby

BY JOHN BURNS

ONE OF THE FASCINATING aspects of the modeling hobby is that there seems to be no end to its variations. There are modelers who spend a year building just one model and then there are modelers who complete a model almost every week. In between is the modeler who accumulates kits far beyond his capacity to ever complete them.

Most of us fit right in the middle. We all have kits we're going to build "someday." But "someday" never seems to arrive and unbuilt kits begin to multiply, taking up space in closets, basements, storage rooms, and even under beds!

When this occurs, you have entered another fascinating aspect of the modeling hobby — called kit collecting! With scores of unbuilt kits stashed all over your house, what else are you but a kit collector? I know some of you will rebel at being called a "kit collector" because that was not what you had in mind when you bought all those kits. Face it — there are thousands of modelers all over the world who admit their collecting urges sometimes overpower their building urges.

You will inevitably face the question, "why do you collect all those kits

and never build them?" Here's your answer: "I collect kits for the same reason folks collect stamps and never use them and others collect coins and never spend them." It's the best answer I've been able to come up with. Anyway, pay no attention to snide remarks about your sanity and maturity. Come out of the closet and bring all those unbuilt kits with you. Then you can tell your friends and neighbors that you are a "custodian of miniature, historical memorabilia" and tell them to kindly quit giggling at your stacks of unbuilt kits. Enjoy your hobby — you've got friends!

**Who are they?** Just about anybody in any profession you can name can be a kit collector. Age is no barrier either, and our ranks include every age group, from teenagers to octogenarians. What kinds of kits they collect is also wide open. Some specialize in collecting kits that represent certain subjects from certain periods, such as World War One aircraft, World War Two ships, 1950s automobiles, or 1960s civil aircraft. Some collect everything from a particular model company and there are "one type" collectors who simply must have every model ever made of the P-51 Mustang or the Ford Model T. Other collectors search only for kits in one scale.

All modelers (except, perhaps, die-hard scratchbuilders) are kit collectors to some degree, but some collect rare and unusual kits like these that are worth many times their original selling price. Adams' Thor missile, Frog's Vauxhall, Hawk's racing plane set, Nichimo's Bell 47J, and Revell's "Bonanza" figure set are highly sought-after collector items.

There are solid wood kit collectors, wood and plastic kit collectors, plastic-only collectors, and even paper kit collectors. Some are even in love with dinosaur, fictional spacecraft, and monster kits. If it was made to be put together by screws, glues, or snap-aparts, you can be sure somebody wants it for his collection. And then, of course, there's the real nut who simply must have everything ever produced!

Collecting interests can change. I started out collecting the old Monogram Speedee-Bilt kits because they were the kits I built as a teenager. Then I collected aircraft, armor, and ship kits of the Korean War era since I spent some service time in that conflict.

Why I moved from there to Revell's 1/32 scale Highway Pioneer cars I'll never know, but that move was followed by a still-burning interest in war machines of 1914-1918 and civil aircraft of the Roaring Twenties. See how varied the scope of collecting can be? That's much of the fun. Select your area of interest, find out what kits are available, and start collecting!

**How to get started.** The days of walking down to the local hobby shop





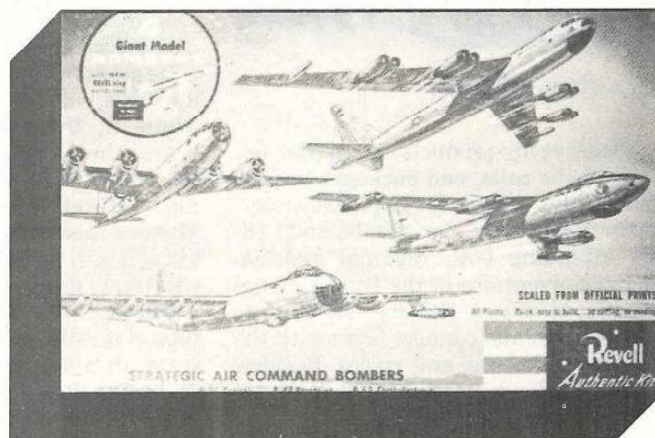
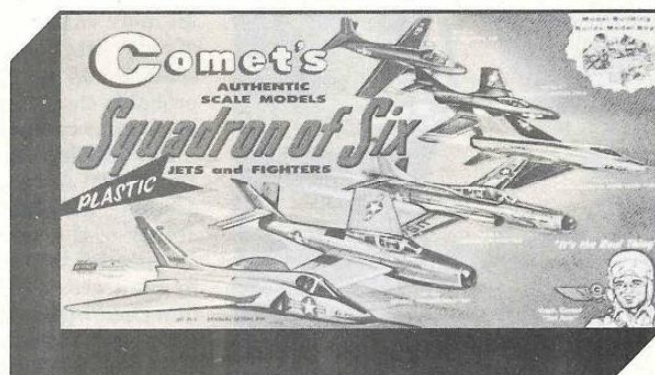
Gift sets were produced in smaller numbers than any single kit they contained, so their values are high. Most gift sets followed themes, but few held a constant scale.

and buying an old kit off the shelf are long gone. You can't even find old kits in the discount stores anymore. You could frequent garage sales, flea markets, or antique alleys, but only on rare occasions do old kits turn up. Marvellous discoveries are still made now and then, but they are infrequent and it is difficult to rely on them to find old kits.

The best thing to do is to contact other kit collectors through the pages of kit collector's journals such as *The Kit Collector's Clearinghouse* or *Vintage Plastic*. To find out what kits have been produced, get a copy of the *Collectors Value Guide to Scale Model Plastic Kits* or *Kit Collectors' Pricing Guide* — 1981. See the list on page 34.

There are other sources for old kits. Some commercial modeling magazines have sections for want and disposal ads. The International Plastic Modelers Society/U. S. A. publication *Update* also carries ads for members offering kits for sale or trade, or kits wanted.

When you respond to an ad, include an SASE (self-addressed, stamped envelope) to speed up responses. Once the contact has been made and the transaction agreed upon by both parties, be quick to hold up your end of the bargain. Nothing creates anxiety like a long (and unnecessary) wait for kits or money to arrive. Treat the other guy as you want to be treated and you'll have few problems.



Don't expect to find what you're looking for immediately. Chances are lots of other folks are looking for the same items. Patience is certainly a virtue in kit collecting and it will probably save you money, too. Study the ads, send for the sale lists, compare prices, and then decide what you want and what you can afford to pay.

Most collectors are in the hobby to have fun — not to make money — and often will negotiate on kit prices. There are few bargains left, however, so expect to pay well beyond the kit's original price. Remember that some are rare, hard to find, and may never be produced again. That's why they are collectibles!



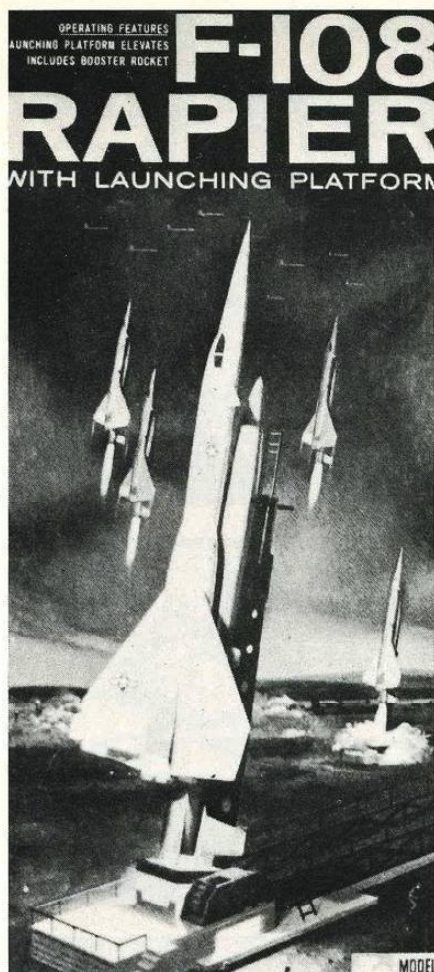


Fig. 1. ITC F-108 Rapier

Pleasant by-products of all the letters, phone calls, and packages are the friendships which develop. Kit collectors are basically nice people, and I enjoy attending both regional and national conventions of the International Plastic Modelers Society. It's fun to meet people and connect faces with the names, addresses, and voices. Besides, making friends may help you in kit transactions down the line.

**What makes a kit valuable?** Just because a kit is old does not necessarily mean that it is valuable. There are



Fig. 2. Airfix James Bond and Odd Job

seven basic factors which affect the value of any kit:

**Production.** There have been many kits of the P-51D Mustang, but only one kit of the F-108, which makes this kit more valuable. Subsequent reissues of older kits also affect value. The 1/89 scale F-108 kit by ITC (No. 3663) is probably the rarest U. S. kit ever made by a major company, Fig. 1.

**Availability.** How many kits of a specific model were produced and are still around? Another factor is the availability of the kit in the United States as opposed to other countries. Hoping to capitalize on the popularity of the film *Goldfinger*, Airfix issued the James Bond and Odd Job kit in 1/12 scale (No. 401), Fig. 2. Resemblance to the movie stars was not too good and the kit was soon discontinued, making it a prized item for kit collectors.

**Demand.** If few people want the kit, its value will be low. When everybody wants it, the value rises. For many years, the Revell Jupiter "C" missile kit (No. H-1819) was difficult to obtain, Fig. 3. Revell reissued it in its "History Makers" series in 1983. The original kit will still be collectible but its value will likely drop.

**Quality.** The accuracy of molding, type of plastic, and fidelity to a popular scale all affect value. The Airfix 1/72 scale Handley Page 0-400 (No. 590), Fig. 4, is one of the few kits produced of WWI heavy bombers.

**Uniqueness.** Different decal schemes and unusual box art may affect a kit's

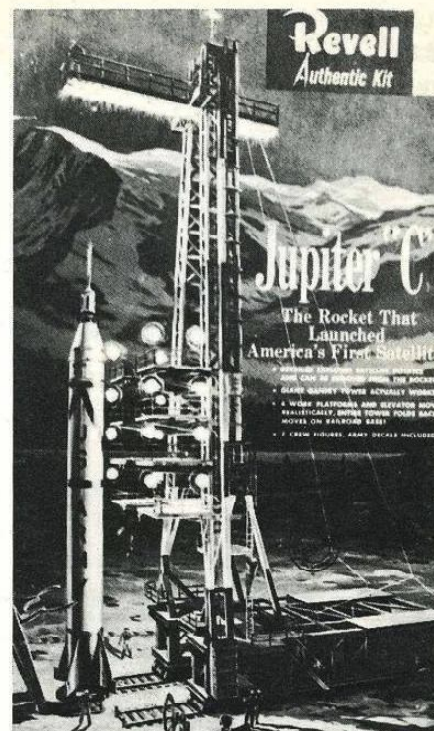


Fig. 3. Revell Jupiter "C" missile

value. This is especially true with airliner kits. The most sought-after Revell airliner kit is the 1/115 scale Electra, Fig. 5, which was issued three times before the molds were irreversibly altered to make the P-3A Orion. Revell's American Airlines Electra (H-255), Varig Electra (H-255), and Los Angeles Dodgers Electra (H-255D) are among the most valuable kits of all time.

**Age.** Original (or very old) box art is usually valued higher than later issues of the same kit. Hawk combined vacuum-formed and injection-molded parts in its 1/247 scale Graf Zeppelin kit (No. 301), Fig. 6. Even the Testor reissue of this kit (minus the injection-molded P-26s) is considered collectible.

**Condition.** Kits are more valuable when they are complete, unbuilt, and in good condition. Another highly prized ITC kit is the 1/50 scale Grumman Goose amphibian (No. 3654), Fig. 7.

In addition to the above factors, a collector may feel a sentimental attachment for some kits, which will affect their prices. Kits of WWI and 1930s aircraft are more valuable to me than WWII or jet airliner kits because they are my specialties. The number of a specific kit a collector has on hand also affects its value. If I have six Aurora Ryan X-13s (dreamer!), the value I would place on the first one is less than the price I would set for the last one. Common sense coupled with constant communication with other collectors will help you set values on the kits you have for disposal and guide your decisions in kit transactions.



Fig. 4. Airfix Handley Page 0-400



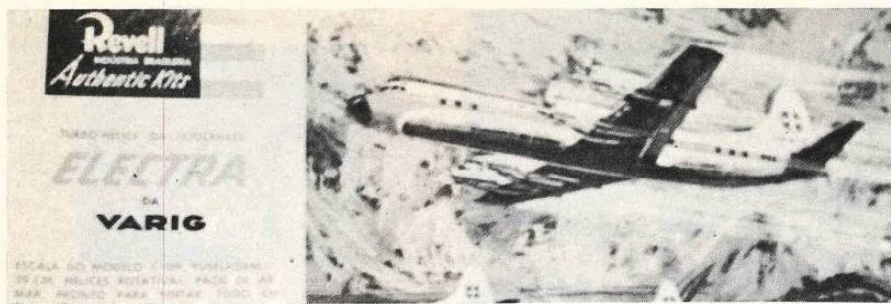


Fig. 5. Revell Lockheed Electra

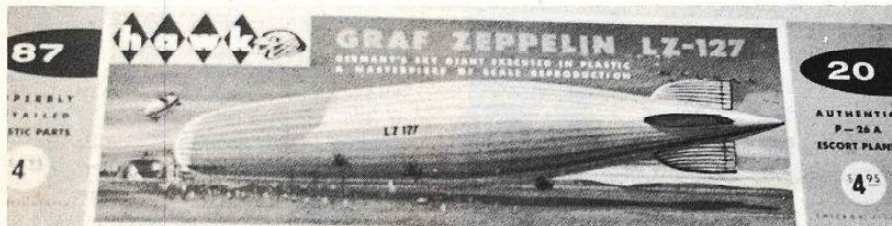


Fig. 6. Hawk Graf Zeppelin

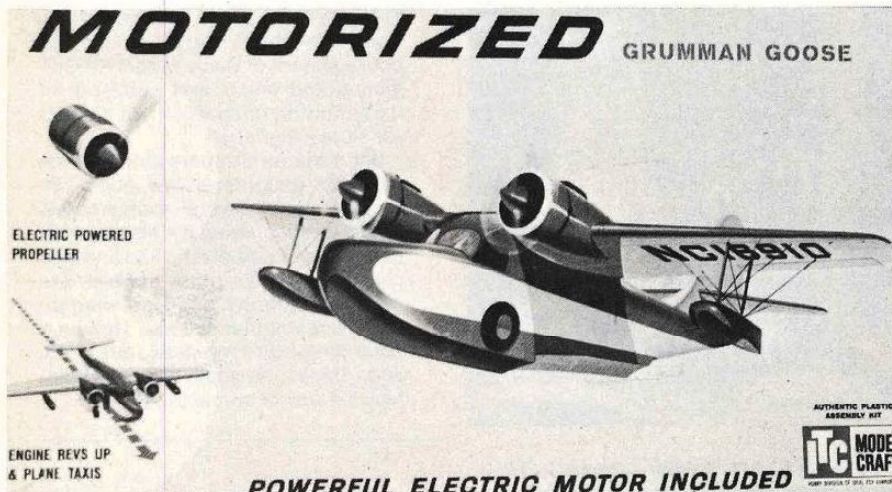
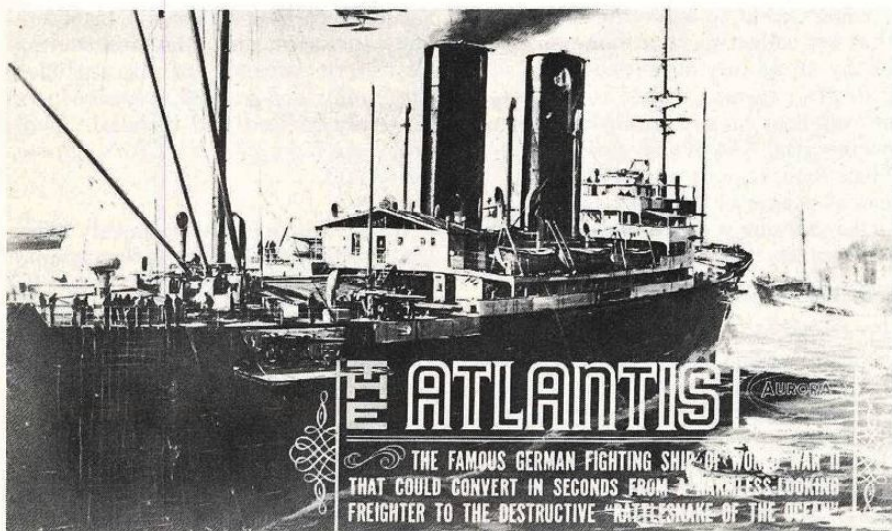


Fig. 7. ITC Grumman Goose amphibian



Ship kit collectors look for the rare Aurora 1/456 scale Atlantis kit (No. 710).

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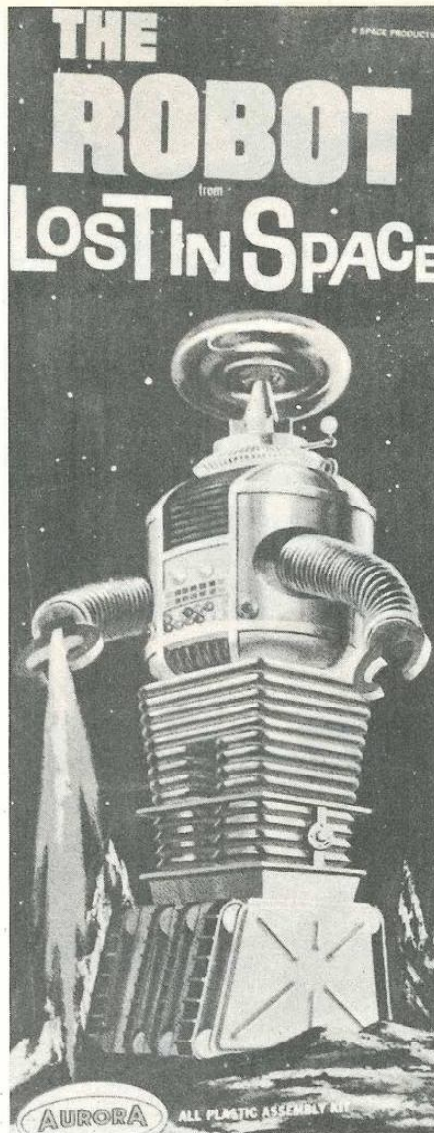
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Kits linked to television shows have always been popular. Among the most valuable is Aurora's 1/11 scale Robot from the TV series "Lost in Space" (No. 418).

I don't want to leave the impression that kit collecting is a money-making hobby. In no way does it compare with collecting stamps, coins, comic books, or even beer cans in money-making opportunities. And in one sense, I'm glad. Since there is not much to be made, the money-makers have left us pretty well alone, leaving a much more enjoyable, personable, and friendly hobby. **FSM**

## USEFUL PUBLICATIONS

*Kit Collector's Clearinghouse*, the bimonthly newsletter of the Society for the Preservation and Encouragement of Scale Model Kit Collecting, reaches hundreds of kit collectors worldwide. An annual subscription costs \$9.00 and is available from 3213 Hardy Drive, Edmond, OK 73034. Each issue contains want and disposal ads and features on rare and unusual kits.



## Meet John Burns

John has been a Baptist minister for almost a quarter of a century, specializing in campus ministry. He earned a graduate degree in religious education in the mid-1960s and a Doctor of Ministry in 1979. He is the Director of Baptist Student Unions in Oklahoma City with responsibilities on five campuses in the area.

In addition to his religious work, John is an award-winning modeler and charter member of the Metro Oklahoma City chapter of IPMS and has served as its vice-president for five years. He is the founder of the Society for the Preservation and Encouragement of Scale Model Kit Collecting and editor and publisher of its bimonthly magazine, *Kit Collector's Clearinghouse*.

John shares his spare time with his wife, son, daughter-in-law, and a cat. He has added several rooms to his home to accommodate his growing collection of rare plastic kits and die-cast cars. John's other hobbies are golf, photography, and a growing interest in computer science. He's also "pumping iron" regularly, but at 48, John thinks his goals are only "fantasy dreams of an old man!"

*Collectors Value Guide to Scale Model Plastic Kits* has 200 pages and lists over 10,000 plastic kits by company, kit number, scale, and current market value. Pictures of kit box art, brief company histories, and other information for the kit collector are also included. First published in 1980, it has been extensively revised and updated. Available from *Kit Collector's Clearinghouse* for \$20.00.

*Vintage Plastic* is the bimonthly newsletter of Kit Collectors International. It began in 1980 and is similar to *Kit Collector's Clearinghouse* in content and intent. An annual subscription costs \$12.00 and is available from Bob Keller, P.O. Box 38, Stanton, CA 90680.

*Kit Collectors' Pricing Guide — 1981* is a value guide published by Kit Collectors International. The 110-page guide costs \$9.00 for KCI members, \$13.50 for nonmembers.







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"Isn't it about time you built a spray booth?"

## A do-it-yourself spray booth

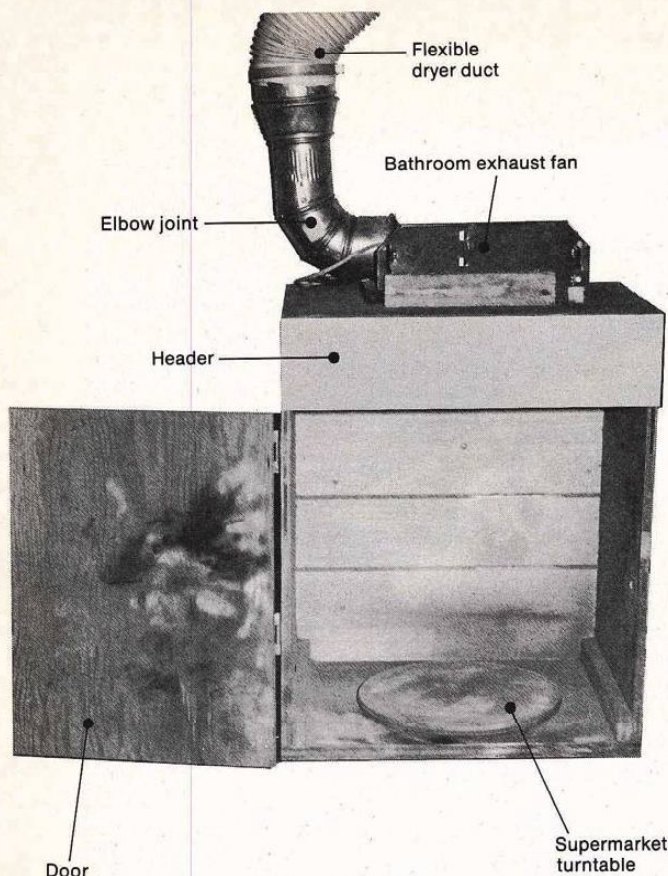
A healthy, one-afternoon project

BY WAYNE E. MOYER

**O**NCE YOU ACQUIRE an airbrush you quickly learn that there are hazards associated with operating it. First, if you're spraying in an open area, the inevitable overspray, those particles of paint that don't stick to your models, tends to settle on everything, including previously painted

components, decal sheets, and clear parts. If you spray into an enclosure, the dense concentration of paint vapors makes it difficult to get a high-gloss finish. If you close the workshop door and clean the brush with a strong solvent such as lacquer thinner, the fumes may be hazardous to your health. If you don't have a workshop door to close, your spouse's reaction *will* be hazardous to your health.





Wayne's spray booth is inexpensive and easy to build. The turntable makes it easy to paint a model without handling it.

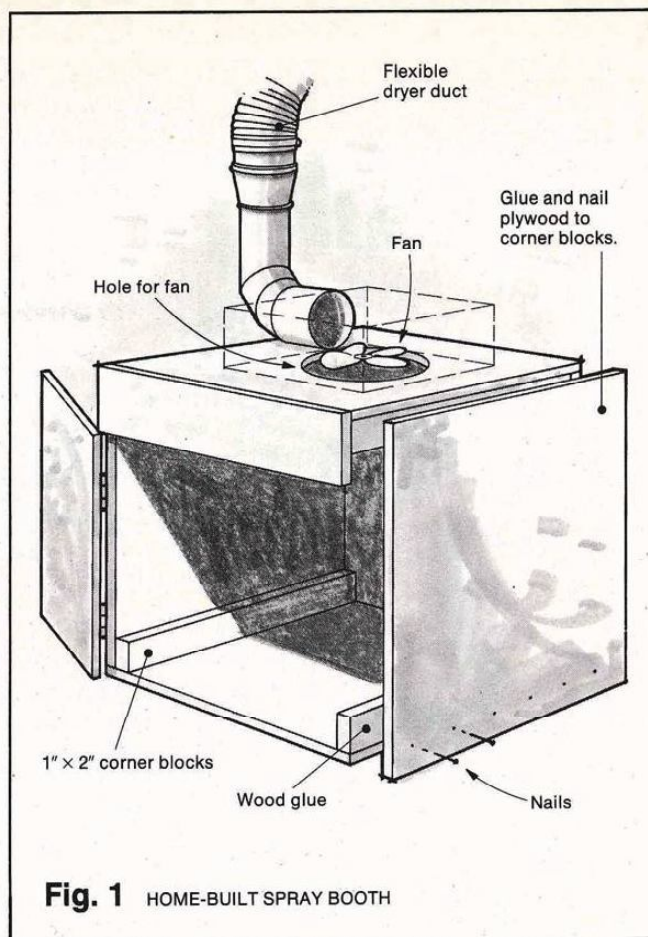


Fig. 1 HOME-BUILT SPRAY BOOTH

The solution to all these problems is a spray booth — a box equipped with an exhaust fan which takes all those nasty vapors and dumps them outside the house. You can buy a spray booth or build one yourself in a couple of hours for less than \$50.00.

**Cutting timber.** Figure 1 is a sketch of the box I built. Dimensions are not given because they're not critical — unless you make a booth too big for your fan to handle. Mine measures 21" high, 18" wide, and 14" deep. It works well, though if I were to do it again I'd make it about 6" deeper. I used  $\frac{1}{2}$ " plywood with a  $\frac{3}{4}$ " floor and a  $\frac{1}{4}$ " door because that's what I had lying around. The booth could easily be made with  $\frac{1}{4}$ " for everything but the floor to reduce costs.

You can join the corners in any number of ways, but bear in mind that this project is a box that you're going to spray (and probably, spill) paint into, not a piece of fine furniture. I did it the quickest and easiest way with the good old corner block. I cut the top and bottom pieces to the width and depth dimensions and then cut 4 pieces of straight, 1" x 2" furring strip to the depth dimension. I coated these with Elmer's Carpenter's Glue and then nailed them in place. After the glue set up I used a saber saw to cut a hole in

the top piece to accommodate the fan.

Next, I spread Elmer's on the blocks and edges of the top and bottom and nailed on the sides. When you build yours, take a couple of minutes to make sure everything's square. Let the glue set up before fitting the back. Although the vent kit (installed later) has a flapper valve, cold air can come in through the exhaust if you don't close the booth with a door. I cut 4" off the top of the front for a header and nailed that in place, then hinged the rest to one side for the door.

**Choosing a fan.** I first tried a Radio Shack fan intended for cooling stereo equipment but it was too small to do the job. I settled on a standard bathroom exhaust fan found in hardware stores, building supply houses, or Sears stores. I also purchased a clothes dryer vent kit and some flexible dryer duct.

Pick the location for your spray booth carefully; you're going to have to cut a hole through an outside wall (or a window) for the dryer vent, and you want to keep the length of the duct as short as possible to maintain the efficiency of the fan. I cut the hole and installed the vent kit following the instructions that came with it. Then I mounted the fan and connected it to the vent with the flexible duct. If you need an elbow fitting, the store where you

bought the vent kit should have one.

One final word about the fan. It's possible to get an explosive concentration of paint or thinner fumes in the box which could be ignited by an electrical arc (sparks). Be sure to get a sealed or brushless fan. If you have any doubts, wire it up temporarily, turn it on, and turn out the lights. Look the fan over carefully; if you see any arcing in a location that's exposed to the airflow, try a different brand. An explosion is even more hazardous to your health than lacquer fumes. In any case, it's wise to turn the fan on before starting to spray to prevent any vapor concentrations in the box.

Using the spray booth is simple; plug in the fan and spray to your heart's content! An inexpensive supermarket turntable (intended to keep spices and such organized in kitchen cabinets) makes it easy to spray all sides of the model without handling it. When you're done spraying, clean the airbrush, spraying into the booth at all times. Let the fan run for a few minutes after you're done spraying to make sure you've sucked up all the fumes and dumped them overboard.

Now that you have a spray booth, your airbrush will be housebroken and socially acceptable — and you'll feel better, too!

**FSM**

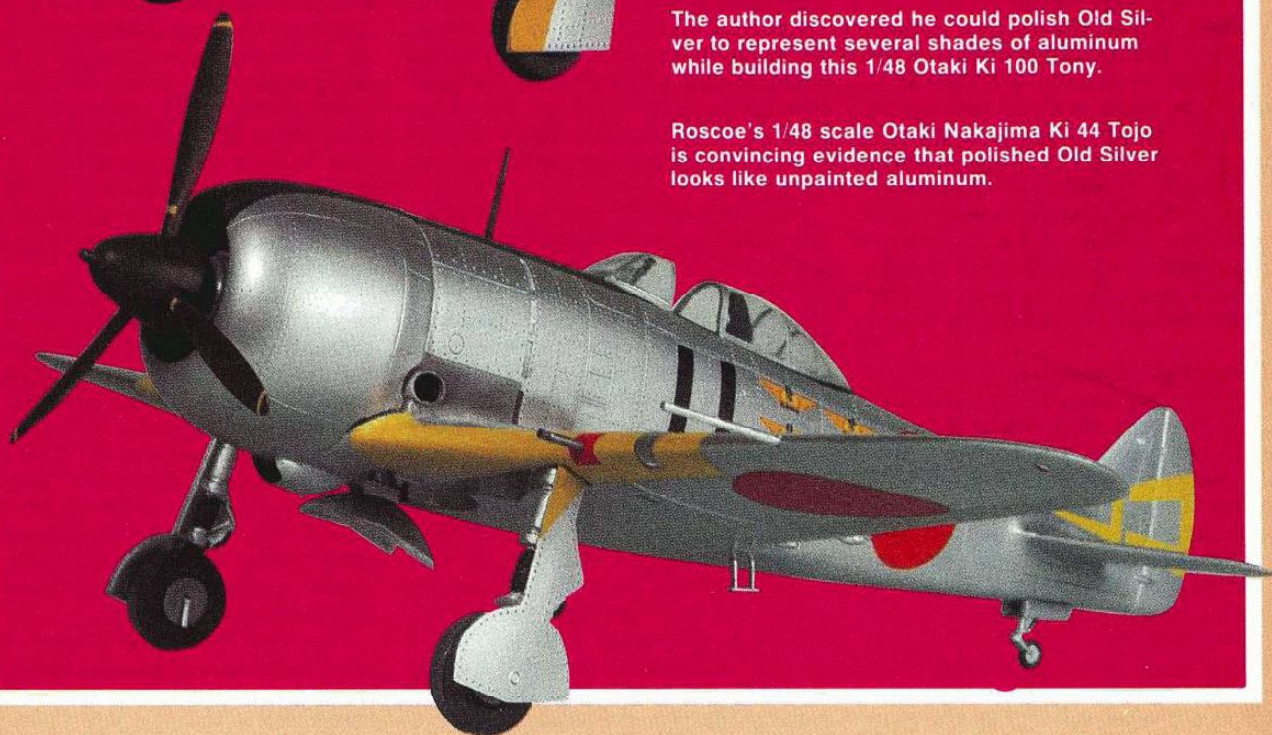




Unpolished Old Silver is excellent for simulating aluminum doped fabric covering, as on Roscoe's colorful 1/48 scale Lindberg Hawker Fury.



The author discovered he could polish Old Silver to represent several shades of aluminum while building this 1/48 Otaki Ki 100 Tony.



Roscoe's 1/48 scale Otaki Nakajima Ki 44 Tojo is convincing evidence that polished Old Silver looks like unpainted aluminum.



# Old silver is solid gold

How to achieve up to three shades of bare-metal finish with a single coat of paint

BY ROSCOE CREED

**I** THINK I'VE TRIED just about all the techniques and products, both in and out of vogue, in attempts to come up with a plastic airplane that looks like aluminum. They all have their virtues and vices.

The enamels are super shiny but look like aluminum paint and take forever to dry. Even then they can't be handled much for fear of leaving fin-

gerprints and they can't be masked over because the pigment pulls off with the tape.

Metallizers are not really paint—they are actually tiny metal particles suspended in a carrier which evaporates and leaves the particles resting on the surface of the model. Metallizers dry quickly and look like metal when polished but, like the enamels, they can't be touched by human hands or masked over. Some can be safely han-

dled when sealed, but then they lose some of their metallic shine.

With both enamels and metallizers, colors must be painted first, then masked before the aluminum is applied. If the mask leaks, touching up is difficult because you can't mask over the aluminum.

Silver auto lacquers dry hard and can be handled, masked, and painted over, but unless the model is well sealed at the start, the lacquer will craze the plastic. Besides, the pigment



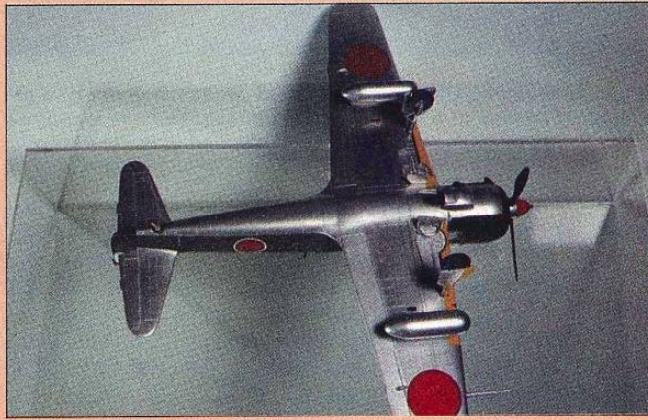
Old Silver is left unpolished on fabric-covered control surfaces, but polished elsewhere with Ultra Brite toothpaste or liquid rubbing compound.



Painting trim colors and applying decals is a snap because, unlike many other metallic finishes, Old Silver dries so hard that surfaces can be handled and masked over.

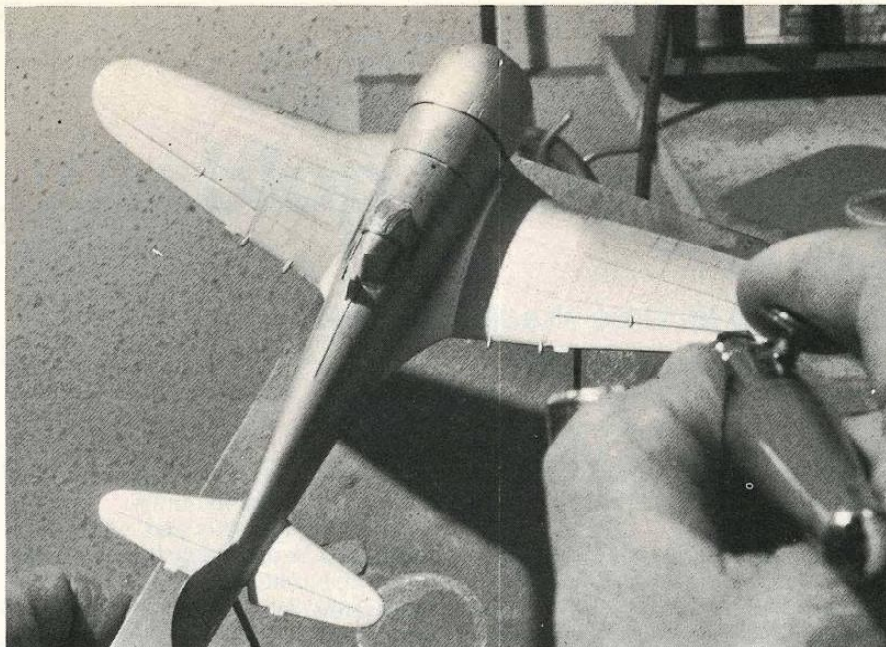


The Tojo has a beautifully detailed, easily painted engine. The slight paint chipping on the blue-black anti-glare panel was actually chipped to let the Old Silver show through.

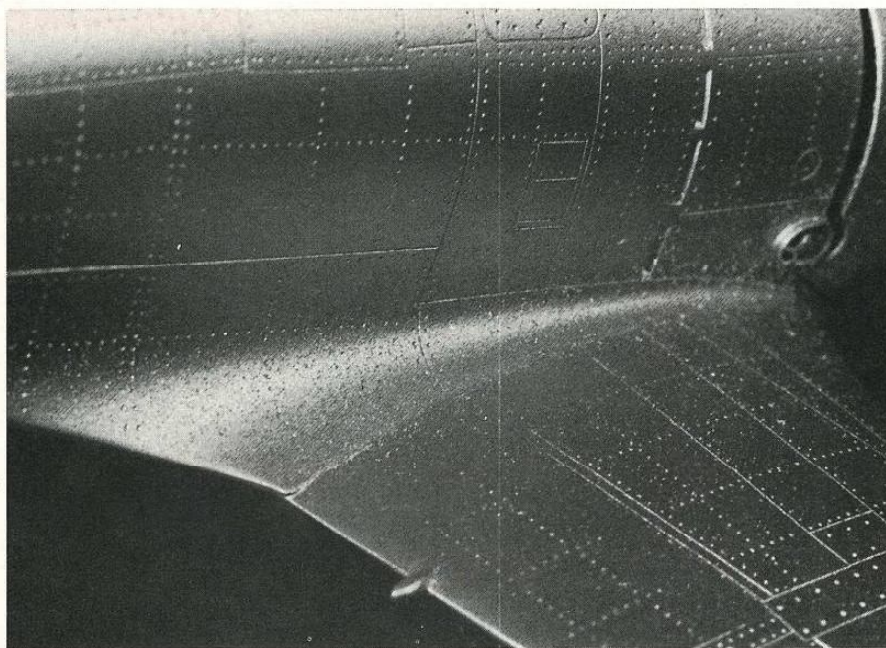


There are three distinct shades of Old Silver on the Tony's undersurfaces. The drop tanks, painted with Floquil Platinum Mist, add a fourth shade.





**Fig. 1.** When building the Tojo, Roscoe primed the seams at the wing and stabilizer roots with Pactra Flat Aluminum to check for flaws, which he then filled and sanded. Polished Old Silver will show even the smallest imperfection.



**Fig. 2.** Airbrushing Old Silver in filleted areas often creates excessive turbulence and overspray settles in a rough, moldy pattern. The overspray particles polish off easily with a tissue or worn sandpaper if not allowed to dry too long.

is a little too coarse for models and the dried lacquer just doesn't look like metal.

**An accidental discovery.** Well, how about an aluminum finish that can be airbrushed relatively easily, shows no pigment particles, dries fast and so hard that it can be handled without fingerprinting, covers putty and cement joints with no special preparation, can be masked over and unmasked without pulling off pigment,

and can be painted over? It's not a new product; it's been on your dealer's shelf for years, especially if he stocks model railroad colors. It's Floquil Old Silver (R100).\*

"Oh, ho!" you say. "That stuff looks as flat as a flounder!" This is true and

\*An identical paint is sold in craft and art-supply stores as Flo-paque Old Silver, and many other Floquil colors are also available as Flo-paque; Floquil and Flo-paque color numbers are the same.

it's part of its value. But there's more: By polishing Old Silver, you can produce a metallic sheen — and by masking and using several polishes, you can get at least three subtly different shades of aluminum from one coat of paint! You end up with a model that looks like a slightly oxidized aluminum airplane.

I began using Old Silver about four years ago on the fabric-covered surfaces of between-the-wars and World War Two aircraft because, straight from the bottle, it looks to me more like aluminum doped fabric than anything else on the market. I was especially pleased to find I could mask and paint over Old Silver without pulling off any pigment.

I discovered that Old Silver could be polished purely by accident. One day I was airbrushing a horizontal stabilizer-fuselage joint, producing considerable turbulence. When the overspray settled I saw an area that looked like it was growing silver penicillin. There was a great moaning and gnashing of teeth as I foresaw sanding and repainting, but for some reason I picked up a tissue and rubbed the offending spot. The "mold" came right off but underneath the Old Silver began to take on a sheen. This was bad, because it looked like metal and I wanted the appearance of doped fabric, so I masked the area and retouched it.

Sometime later I was building a Ki 100 with all-metal undersides and decided to go the Floquil route since the plane had fabric-covered control surfaces. I put the Old Silver on first, so I could mask it before painting the green above. Under the horizontal stabilizers I again got the moldy effect from the overspray.

I rubbed off the overspray with a Q-tip and produced a nice sheen, so I began rubbing other areas with a tissue and got similar results. I finally recognized that Old Silver could be purposely polished to simulate bare aluminum. I masked off the control surfaces so they wouldn't be touched, put a dab of Ultra Brite toothpaste on a piece of old T-shirt, and began to polish in earnest. The result was amazing — the surface looked like that on a slightly weathered aluminum airplane, an effect far beyond anything I had hoped for.

To obtain some differentiation between panels, I masked around a couple and polished each gently with liquid rubbing compound. I got a darker color and still had not rubbed through the Old Silver. Counting the untouched control surfaces and the two areas I had polished, I had achieved three shades of aluminum with one coat of paint.

As aluminum finishes tend to do, this one revealed a flaw in a seam where the wing joins the underside of



the fuselage. I masked the area, using panel lines as guides, refinished the seam, and repainted it. When I polished it and pulled off the masking, I found another, lighter, shade of aluminum. I don't know why.

I then masked the entire under-surface of the model in preparation for painting the upper surfaces but was distracted for a while — four months, in fact. During that time the Ki 100 lay forgotten with the tape in place. When I finally got back to the model I was chagrined to find what I had done but went ahead and painted the green anyway. When I pulled off the tape I discovered to my glee that there was only a little tape residue on the aluminum and this polished out with a slight touch of Ultra Brite. The kind of tape may have been responsible: It was a low-tack variety, 3M Paper Tape No. 256, available in art-supply stores.

**Other experiments.** I had to see if other Floquil silvers would work as well as Old Silver, so I airbrushed Platinum Mist (R144) on the drop tanks. It did, and I had still another shade of aluminum. Spraying on scrap, I found Bright Silver (R101) to be almost indistinguishable from Old Silver.

The results on the Ki 100 were hailed with enthusiasm at local IPMS chapter meetings, and I was encouraged to try Old Silver again, just to see if the results were repeatable. This time I picked an aircraft that was all-metal top and bottom, but had fabric-covered control surfaces and enough paint and decals to make it attractive: Otaki's 1/48 Nakijima Ki 44 Tojo.

I built the model with no more attention to seams than usual. "Usual" for me is sanding all joints flat before assembly so that Microweld liquid cement makes a near-perfect seam. The Otaki parts fit well, with one major exception: The upper halves of the trailing edges of the wings inboard of the ailerons were short and needed putty to match them to the lower halves. Two sinkholes in front of the cockpit also required putty but the rest of the model needed very little.

I sanded the puttied areas, then primed them with Pactra Flat Aluminum (F11), Fig. 1, which dries fast and can be sanded in minutes. The Flat Aluminum revealed a few flaws, which I sanded out with worn No. 600 wet-or-dry paper. Unlike metallizing finishes, no special sealing is necessary to prepare puttied areas for painting with Old Silver.

Because the Tojo was a test-bed for painting techniques, I did little extra detailing on the model, though I did detail-paint the instrument panel and cockpit interior, added seat belts with Waldron fittings, cut the canopy apart so it could be displayed in the open po-



Fig. 3. After the paint has dried overnight, polishing with a dab of toothpaste on a piece of old T-shirt begins to bring out a metallic sheen on the fuselage.

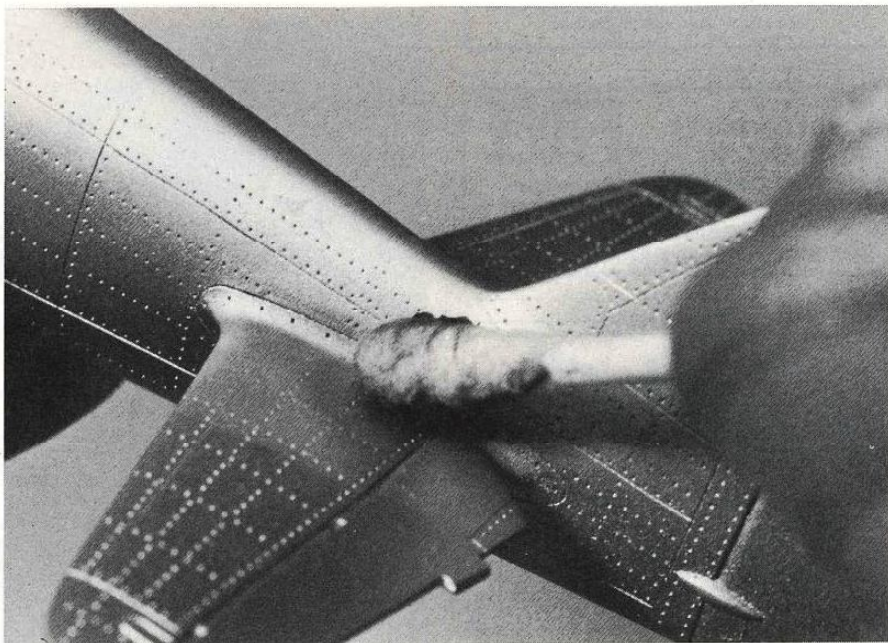


Fig. 4. Fillets and right-angle corners can be polished with toothpaste on a Q-tip or bent pipe cleaner. Be careful with the wire ends on pipe cleaners; they scratch.

sition, drilled out the exhaust ports and put light-blocking baffles behind them, and added brake lines and a landing light.

Assembly complete, I masked the cockpit and engine, washed the model with detergent and water, and dried it with a stream of clean air from an airbrush.

The Old Silver was applied after diluting it one-to-one with Dio-sol, the only thinner to use with Floquil paints.

I let the Old Silver dry overnight, removed the overspray in filleted areas, Fig. 2, then rubbed the Old Silver out with Ultra Brite and got the desired result, Fig. 3. I polished small fillets with a Q-tip, Fig. 4. Then I masked a couple of large wing panels and polished them with liquid rubbing compound just as I had done with the Ki 100 — but this time I rubbed a hole in the paint.

Apparently I had not coated the Tojo as heavily as I did the Ki 100, for I





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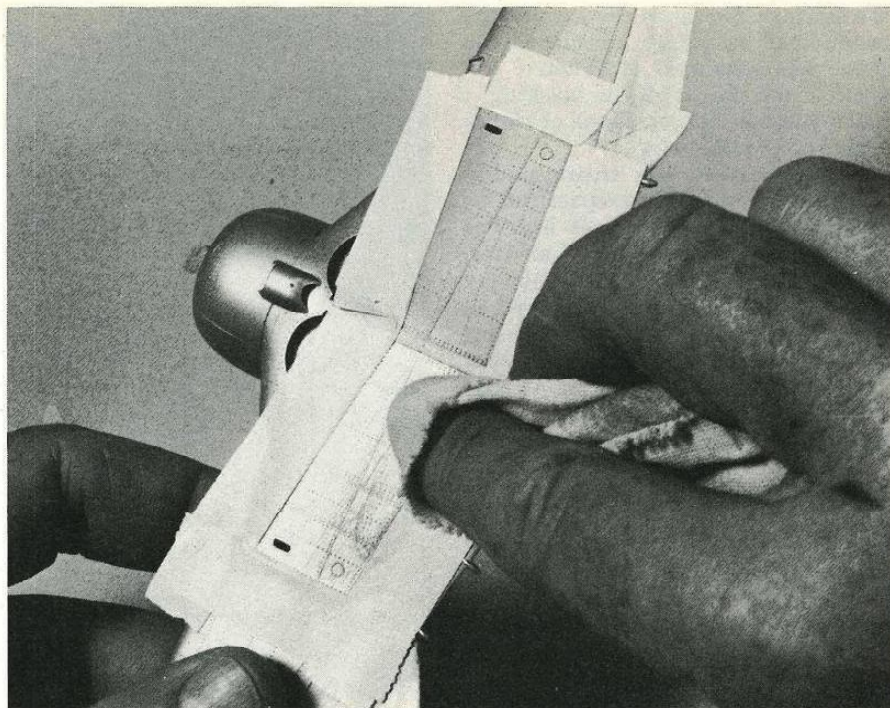


Fig. 5. Masked-off wing panels come up a darker shade of aluminum when polished with liquid rubbing compound. Roscoe masks with a low-tack paper tape.

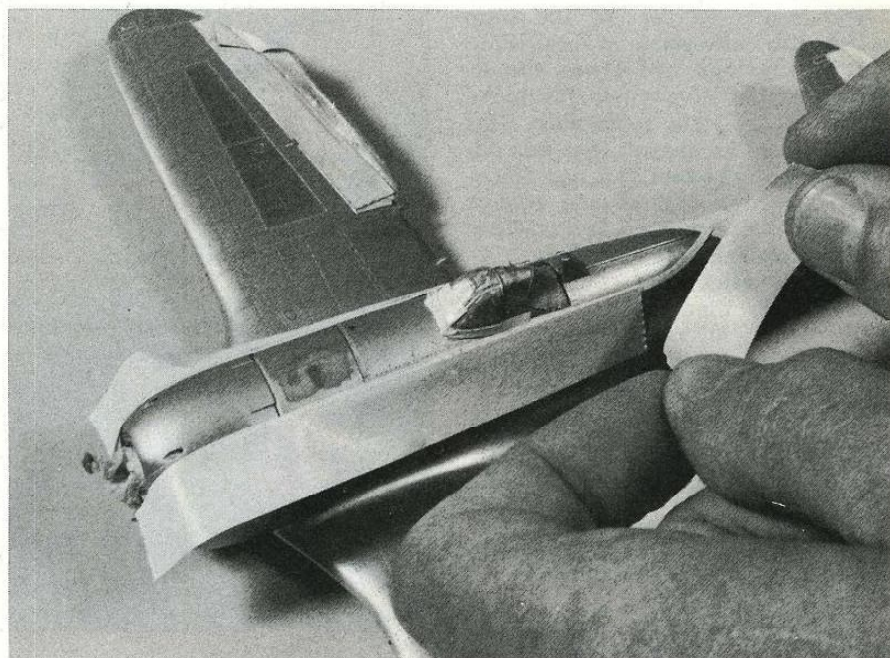


Fig. 6. The Tojo had anti-glare panels both in front of and behind the cockpit. These were painted right over the Old Silver using Pactra enamels.

rubbed through in other areas as well, such as on removable panels and other panels that would have been cut at different times. But no matter: I left the masking in place, then washed the areas and repainted them with light coats of Old Silver that dried quickly. The repainted areas were rubbed out equally rapidly, thereby producing a different shade of aluminum, the effect I wanted in the first place, Fig. 5.

Painting the Tojo's unusual blue-black anti-glare panels in front of and behind the cockpit and the yellow leading edge ID panels was a breeze — I simply masked off these areas and painted over the Old Silver, using Pactra paints, Fig. 6.

To increase the variation in shades of aluminum even more, I painted the landing gear struts and wheel hubs — which are separate from the tires in





## Meet Roscoe Creed

Ros Creed became serious about building plastic models in 1976 when he ran across a Kalmbach book entitled **BUILDING PLASTIC MODELS** and discovered green stuff. "I always wondered where those little cracks went," he says.

This seriousness won him his first IPMS national award two years later, and he continues to add to his collection of local, regional, and national trophies.

His primary interest is 1/48 scale World War Two and Golden Age aircraft, although at 51 he wishes he had started with a larger scale. "I can't even see 1/72 scale models anymore," he says.

Ros has been an IPMS member since 1977, and was the first president of the Alamo Squadron, IPMS, in San Antonio.

An industrial journalist for 25 years, Ros recently left the security of corporate life to become a free-lance writer, writing mostly about his two hobbies, modelbuilding and touring on his Honda Interstate.

this kit — with Pactra Steel (M15), and the insides of the landing gear covers with Pactra Flat Aluminum. Interestingly, the Tojo had knock-off handles for quick wheel and tire changes; I painted these handles Old Silver.

Decals settled beautifully over the polished aluminum. I trimmed the stock Otaki decals to the paint lines and applied them individually, softening them with Micro Sol so they would conform to Otaki's light-handed, low-relief rivet detail.

After adding an antenna mast filed from a finishing nail — the one in the kit is too flimsy — a stretched-sprue antenna, the landing gear covers, and propeller, I felt I had come as close to a miniature aluminum Tojo as I could get, Fig. 7.

**A few cautions.** Don't misunderstand: Floquil Old Silver is not easy to live with. It reacts to humidity and temperature changes with predictable unpredictability, sometimes flowing from the airbrush as easily as water, while at other times it is as balky as house paint. Sometimes it dries quickly; sometimes it stays tacky for days. It is

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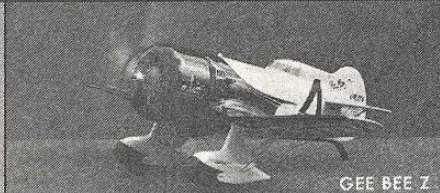
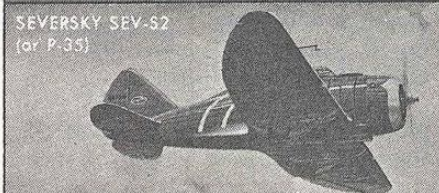
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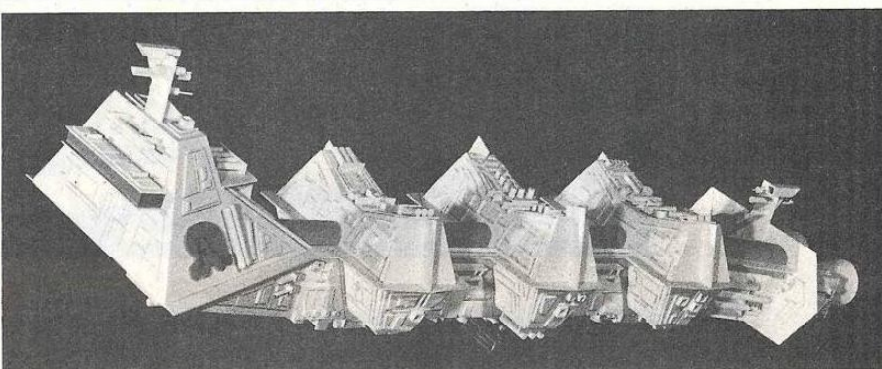
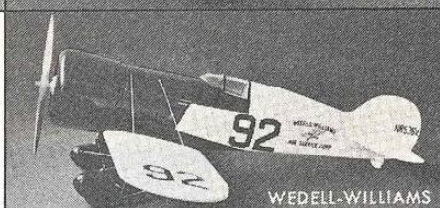
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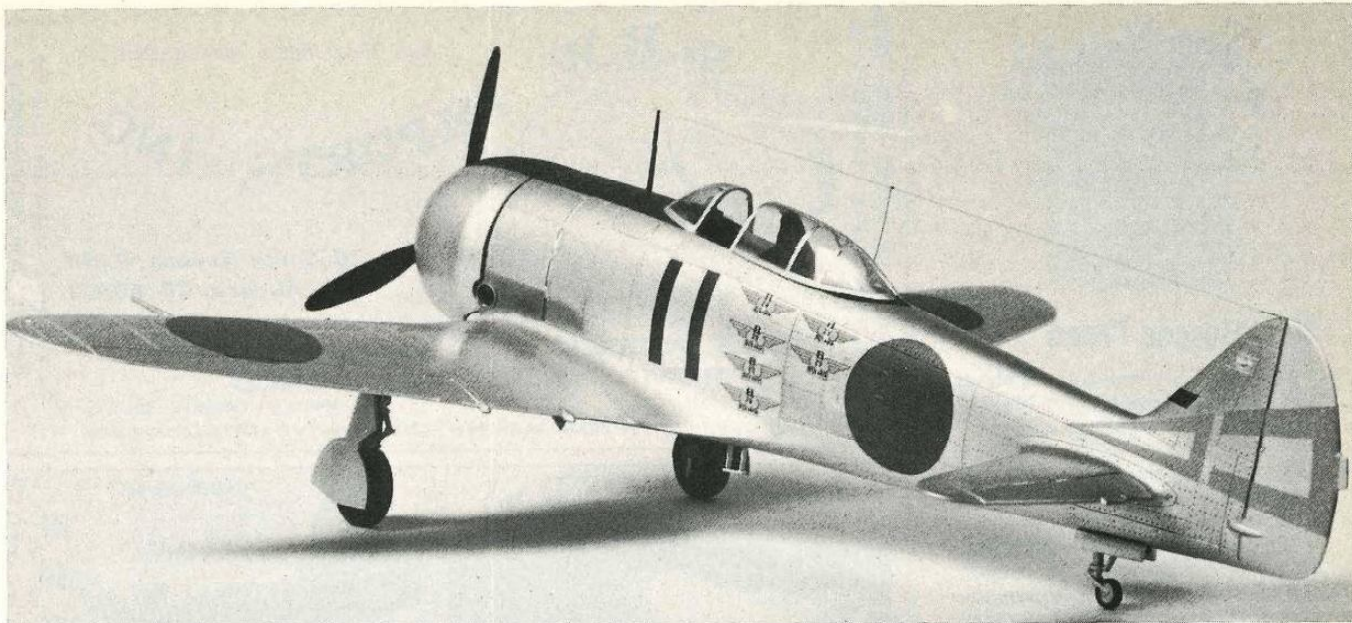


Fig. 7. Final details on the Tojo included an antenna mast made from a finishing nail and antenna wires of stretched sprue.

impossible to spot retouch, as it never comes up the same shade twice — entire panels must be masked around and repainted.

Old Silver seems to react differently in different airbrushes. I have passed the technique along to modelers who use other brands of equipment and

they have not had the same results. I use a Paasche Model VL double-action airbrush with a No. 1 tip. Normally, I use 30 pounds of pressure, but on hot, humid days I hop it up to 40.

In the long run the Old Silver technique is no easier and no faster than working with other paints or metal-

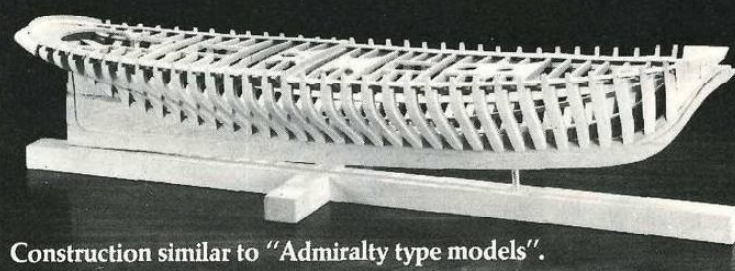
lizers, but to me the facts that Old Silver can be masked and painted over and that the model can be safely handled barehanded are worth a lot. Above all, Old Silver looks realistic. If I may borrow and slightly twist an old Hebrew expression: "Try it; you may like it!"

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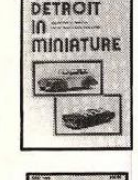
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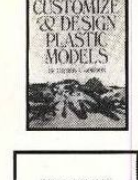
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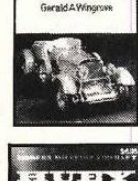
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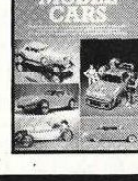
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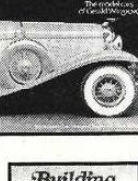
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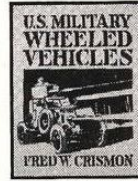
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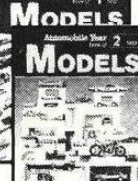
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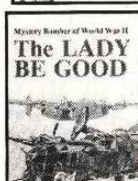
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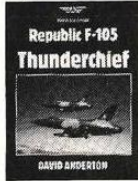
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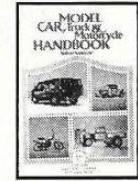
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Ed's 1/35 scale Tamiya M48A3 and M4A3 conversion received his weathering techniques of washes, pastels, and shadow enhancement. Note the damaged fenders on both vehicles.

All photos, FINESCALE MODELER: Paul A. Erler

# Weathering armor models

Using paints, pastels, and washes

BY EDWARD G. MILLER

**A**NY VEHICLE, except those just off the production line, will show the effects of exposure to the elements. Even though modelers spend many hours accurizing and constructing their kits, weathering is often accomplished as an afterthought, and a poor weathering job can ruin what otherwise would be a fine model. Weathering should be thought of as an integral part

of building and finishing any model.

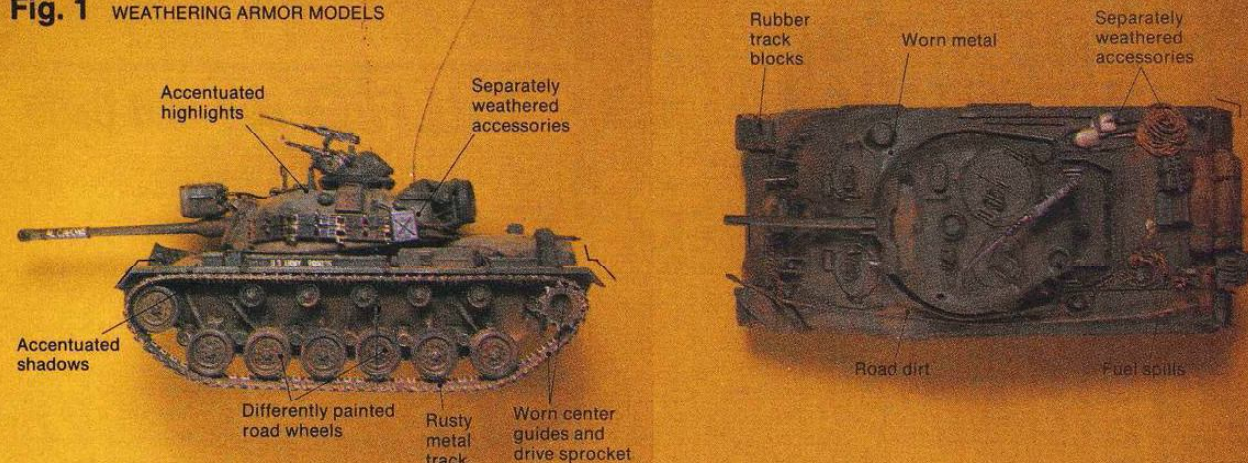
Although models normally cast shadows that create a natural appearance, the addition of subtle shading, coupled with an accurate weathering job, will greatly improve the overall visual effect of a model, Fig. 1.

I've seen tanks operate in field environments varying from deserts to winter conditions. Based on experience, my weathering techniques effectively and accurately simulate the effects of the

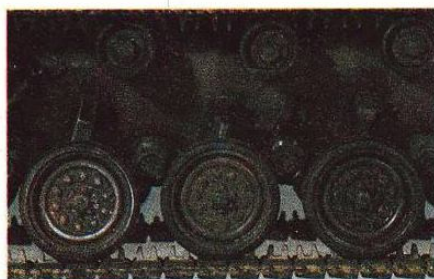
elements on vehicles. To demonstrate, I'll use Tamiya's 1/35 scale M48A3 and M4A3 (75 mm) Sherman, converted into an M4 composite hull variant. I'll skip over basic construction, conversion, structural details, and battle damage. I start weathering before final assembly, keeping the turret, hull, and tracks as separate assemblies.

**Base coat.** I use a mixture of 6 parts Humbrol Olive Drab (HM3) and 4 parts Testor Model Master Olive Drab (FS

Fig. 1 WEATHERING ARMOR MODELS

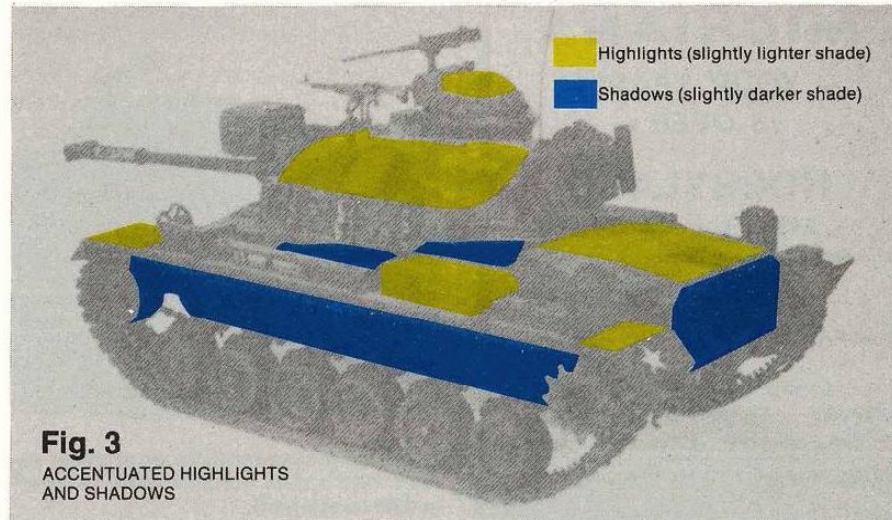






**Fig. 4.** Road wheels are often replaced and shouldn't all look the same. The wheel on the left is dirty and worn, the one on the right is new and still shines.

34087) to make a slightly faded olive drab. To simulate cast steel, I use a  $\frac{1}{8}$ " or  $\frac{1}{4}$ " flat brush and apply an undiluted coat of the base color. After this coat has dried for a minute, I stipple it with an old, flat  $\frac{1}{4}$ " brush, producing a rough, but not pitted, texture, Fig. 2. After the base coat is thoroughly dry, I airbrush a coat of the same color to eliminate any unpainted areas. Make sure you add the cast-steel effect only to the correct vehicles, and then only to cast-steel plates. Among others, the M1 Abrams and M113 are not made of cast steel.



**Long-term weathering.** No matter what color the original paint was, continual operation and storage in the elements changes the color of a vehicle. The edges and corners of the topside fade from the sun, rain, and wind, and the undersides of the hull and turret accumulate dirt, oil, and grime. Make a lighter shade of the base color by mixing 7 parts of it with 3 parts Pactra Flat White, and airbrush this on the major angled and curved areas of the upper hull and turret.

After this is thoroughly dry, tint the base color with Pactra Flat Black and spray the lower hull and under the turret bustle. When this is dry, use the base color again to subtly blend the light and dark areas. The varying shades accentuate the natural shadows cast by the model, Fig. 3.

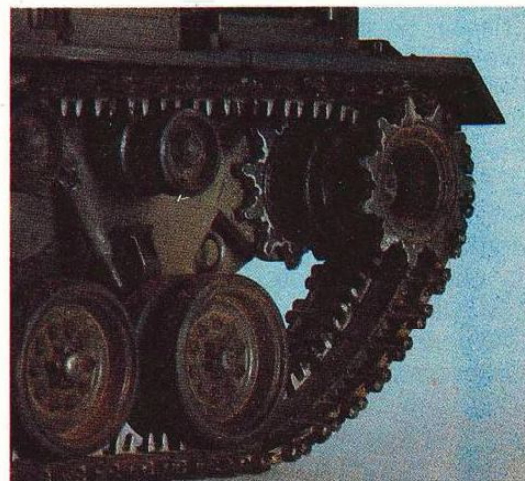
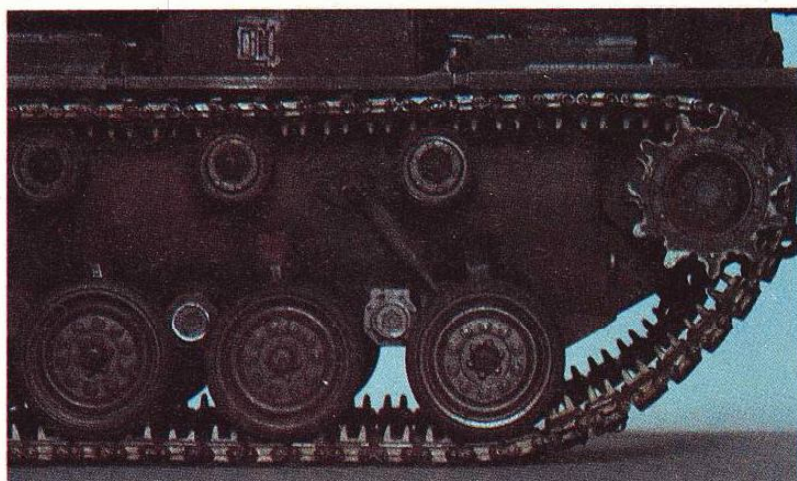
**Wheels and track.** Avoid making all the road wheels the same shade. They seldom wear to the same degree and are often replaced with new wheels. After I paint them the base color, I apply Silver Rub 'n Buff to some of the

wheels to represent older, worn wheels, while "new" wheels receive a dark wash, Fig. 4. Wear on the drive sprockets is also made with Rub 'n Buff, Fig. 5.

To ease painting and weathering, leave the tracks off until the model is nearly finished. First, paint the "metal" areas of tracks with an equal mix of Pactra Rust and Steel and allow them to dry thoroughly. Next, completely cover this with a wash made of thinned out Pactra Rust. Follow that with a black wash. After the track is completely dry, highlight the center guides and areas that contact the road wheels with Silver Rub 'n Buff applied with a finger, Fig. 6.

I never paint rubber track blocks black, but use a very dark shade of gray for basic painting and follow with a black wash. Polly-S Hobgoblin Gray (No. 1418) and Testor Rubber (No. 1183) are good colors for rubber track blocks.

**Rust and worn metal.** Rust and worn-metal effects should be sparse and subtle except for the most battle-worn ve-



**Figs. 5 and 6.** To represent worn paint, Ed applies Silver Rub 'n Buff with his finger on the track center guides and other areas

that are subject to wear. Note the effect on both inner and outer teeth of the drive sprocket.



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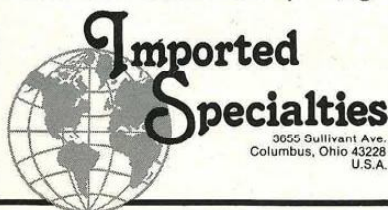
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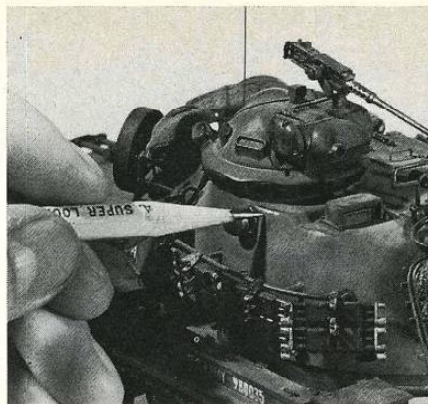


Fig. 7. Ed makes realistic worn-metal effects with a dark metallic paint blended in with pencil lead.

hicles. Minor streaks and stains of rust appear on and around damaged steel fenders, brackets, hinges, along the lower glacis plate, bottom of the hull, and areas which are subject to constant heat or moisture. I vary the shades of orange and red-brown by applying a coat of Testor Rust, then highlight by drybrushing Pactra Rust. This varies the shades, producing a more realistic appearance. Don't apply rust to everything, though. Some modern vehicles are made entirely of aluminum, and others have aluminum fenders and external storage compartments. MODELING TANKS AND MILITARY VEHICLES\*

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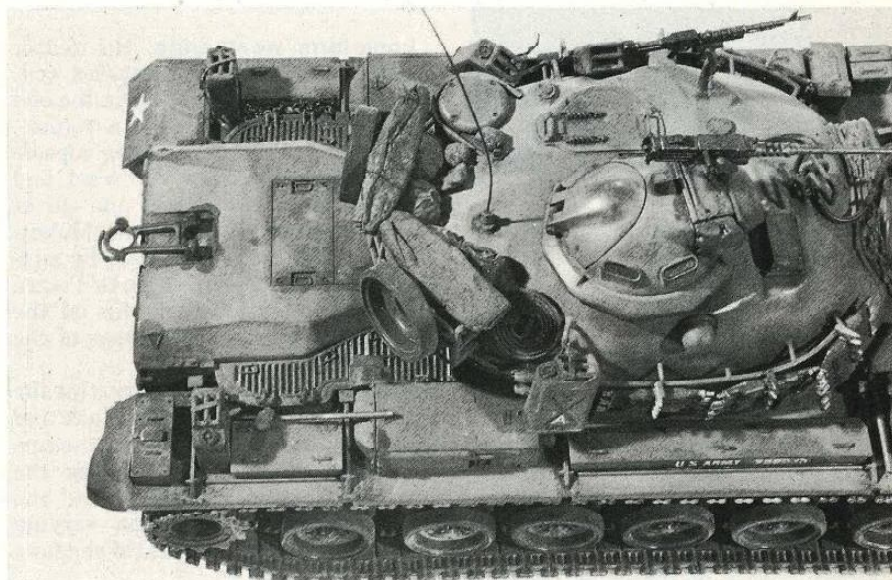


Fig. 8. Oil and grease applied to bearings and hinges creep over the paint. Note the oil stains around the traveling lock and numerous access panels.

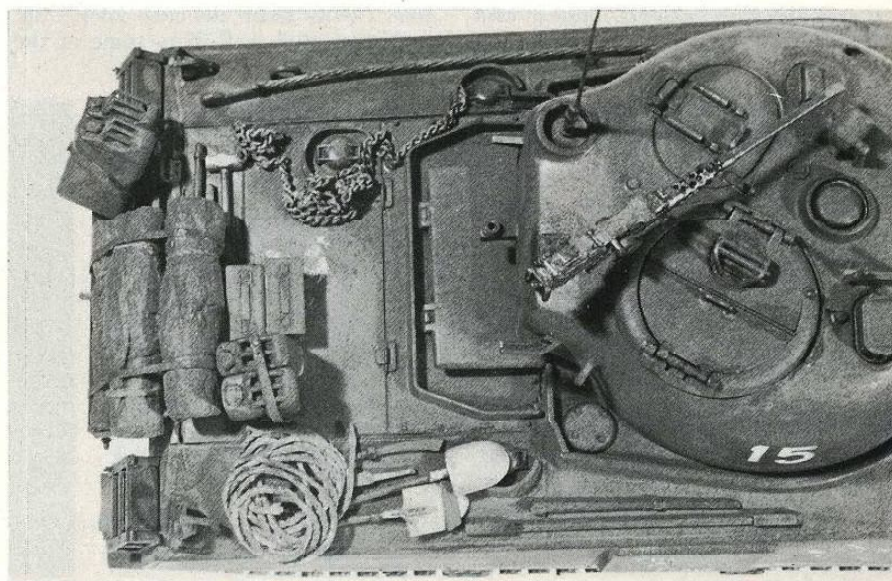


Fig. 9. Ed separately weathers each of the accessories and attaches them after the model has been completely painted and weathered.



by Shep Paine offers useful hints on applying rust.

Even though personnel constantly climb and walk on tanks, they don't cause excessive wear, especially on the modern alkyd enamels used today. You'll seldom see large bare-metal areas on a real vehicle. Sometimes scuffed paint is seen around hatch openings, engine access covers, grilles, headlight guards, fender edges, and fuel filler caps. Rather than show all worn areas as bright metal colored areas, I vary the shades of bare metal using Testor or Pactra Steel and graphite or pencil lead to make dark discolorations around the hatch opening and hull, Fig. 7.

**Short-term weathering.** Everything I've covered so far has been "permanent" weathering—faded paint and worn components are the effects of constant exposure to the elements. Next comes "temporary" weathering which, on an actual vehicle, is removed by rain or a trip to the washracks.

Mix a very dark gray wash of 3 parts Testor Rubber and 7 parts thinner and apply it to the model's recesses and molded details. Use the same wash to make spilled fuel and oil stains around access panels and fuel filler caps. Next, make a black wash of equal parts of flat black and thinner and use it on the lower hull, underbody, suspension, and road wheels.

Oil applied to hinges and bearings tends to creep across the paint and at-



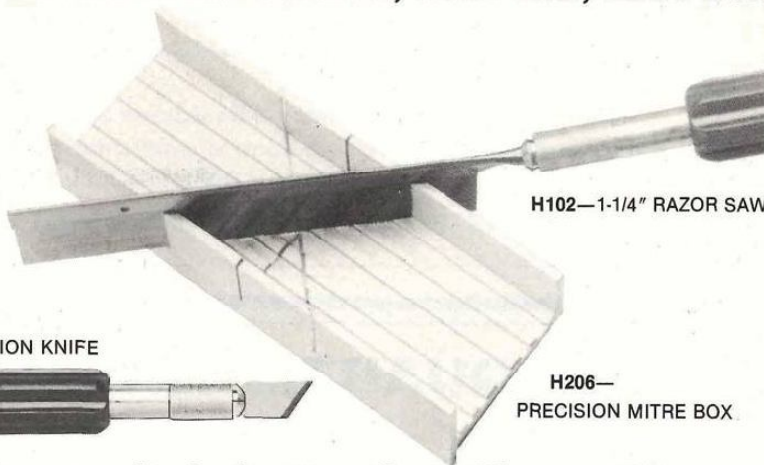
## Meet Ed Miller

Captain Miller is an Army ROTC graduate of Western Kentucky University, receiving his bachelor's degree in history and a master's degree in public administration. Ed has been an avid modeler since 1973, specializing in U.S. armor. Although his production of models is now picking up, it has been slowed recently by his duties in the field. He has served as a Tank Platoon Leader, Tank Company Executive Officer, and Aide-de-camp. He is currently attending the Ordnance Officers Advanced Course at Aberdeen Proving Grounds in Maryland. Ed posed for this photo while acting as a Stuart tank commander (a sergeant) at the Patton Museum's Living History presentation.

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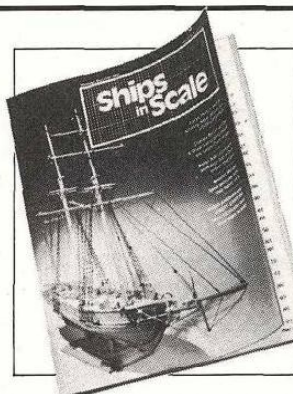
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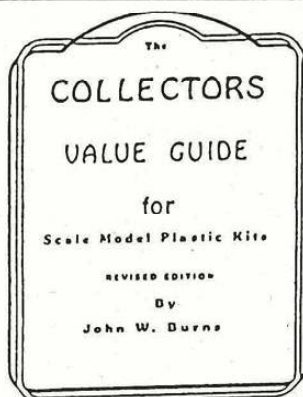
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tract dirt, Fig. 8. These stains can be produced by making a dirty wash of the base color. I use equal parts of the base color and black, then make a wash of 3 parts paint, 7 parts thinner.

**Final weathering.** I'm sold on pastels. When applied correctly, they are effective and won't mar details. Pastels create some outstanding and subtle effects which realistically simulate dust, dirt, and grime. Pastel chalks can be found at any artist's supply store. Earth tone sets are the most useful, but if you can buy individual chalk sticks get black, medium gray, yellow, red-brown, white, and tan.

Applying pastels is easy; rub the chalks on a piece of paper or shave them with a knife until a small pile of dust accumulates. The dust can be applied with a rag, cotton swab, or a fingertip. Depending on the vehicle, I leave small details such as headlights and grab irons off the model until I'm finished using pastels.

To simulate old, ground-in grime and dirt, mix gray and brown pastels and force it into the paint around the back deck and upper and lower glacis plates. Repeat the process with a lighter shade, making sure that you don't cover up any of the rust and bare-metal areas. Then subtly blend these shades together.

**Extra equipment.** I add extra equipment last rather than try to weather around it. Large items such as tarps, boxes, and fuel cans are weathered before I add them to the model, Fig. 9. Put a little rust and wear on metal boxes and fuel cans so they don't look out of place. Leave off all the easily broken details such as machine guns and antennas until the model is completely weathered.

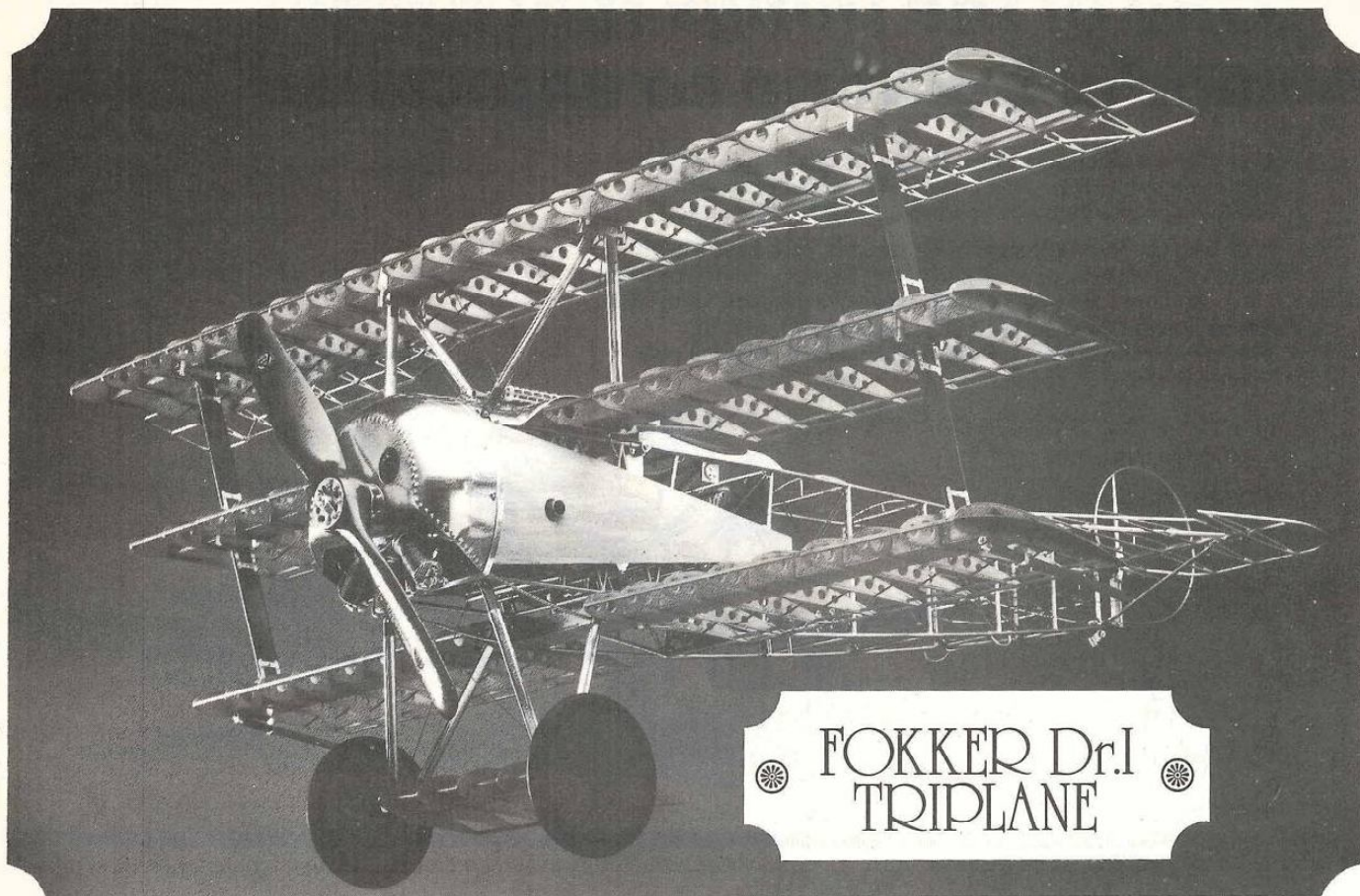
After adding the extra gear, finish weathering with a dusting of pastels to represent dust and road dirt. Mix the pastels to represent the color of the earth in the area of operation of the real tank. Then, using a soft, flat brush, spread the pastel dust over the entire model, letting it collect in corners and around the extra equipment. Add dust behind and under road wheel arms and exposed shock absorbers and between dual road wheels, bogies, and volute springs. I usually apply a dark shade on the road wheels, gradually lightening the pastels as I move up the hull. A real tank usually gets a heavy buildup of dust and dirt on the lower rear hull and back deck from moving through dusty terrain. Before adding the tracks, dust them with pastels, making sure you get dust in between the track blocks.

I'll be the first to admit that this method is time consuming, but weathering can make or break what would otherwise be a fine model. Check photos and use your common sense; pay attention to detail and you'll be on your way.

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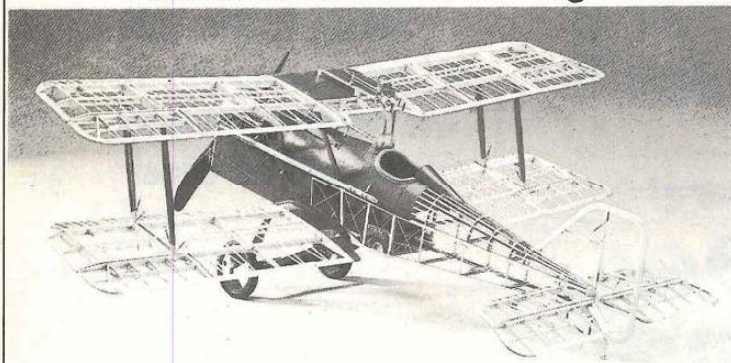


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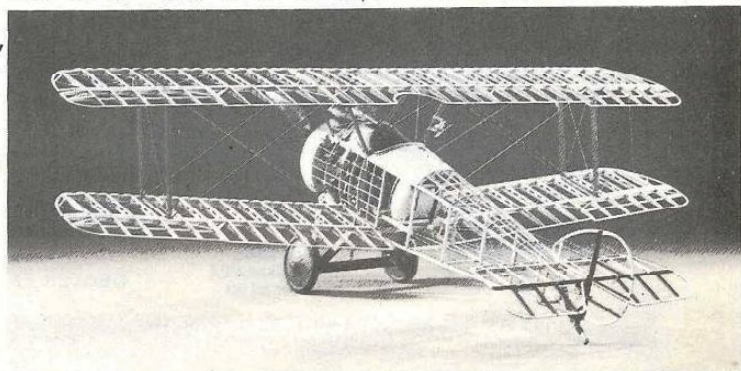
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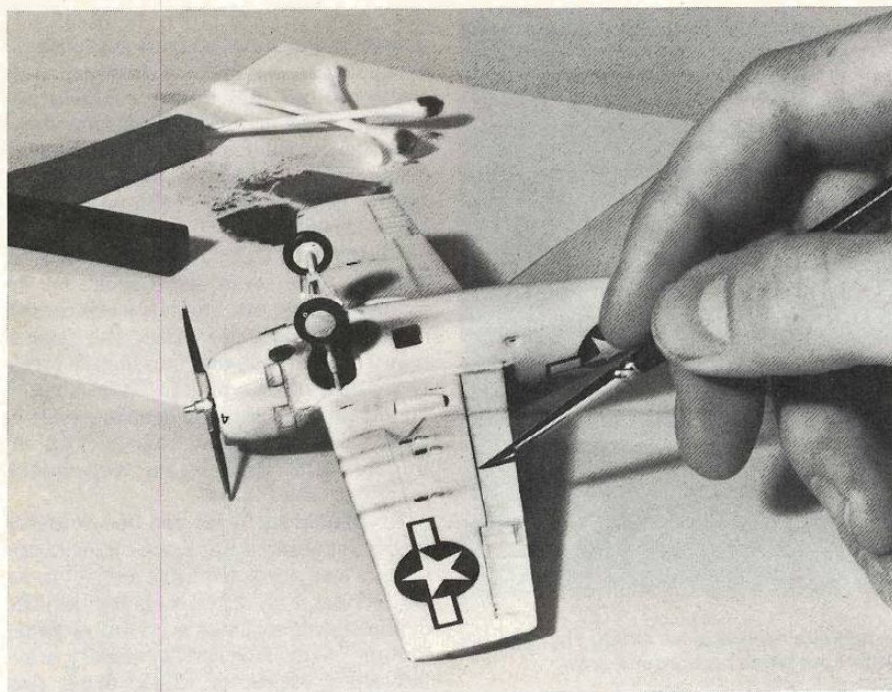
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FINESCALE MODELER: Paul A. Erler

## Detailing with paints — and other materials

Adding tiny pieces isn't the only way to detail a model

BY RICHARD WEHR

**L**IKE MOST MODELERS I enjoy looking at highly detailed models, but I don't always have the patience to open panels or add tiny parts. But depth is not the only di-

mension that suggests detail. Aircraft, tanks, cars, ships, trucks — all modeling subjects — are exposed to the effects of weather and operational wear and tear. Barely noticeable variations in color, sheen, and value can lend an aura of detail to a model without dependence

A thin black wash can emphasize engraved panel lines and flying surfaces like the flaps on this 1/72 scale F4F Wildcat. The pastels in the background are applied with cotton swabs to produce exhaust and gunpowder stains.

on miniaturization and microsurgery.

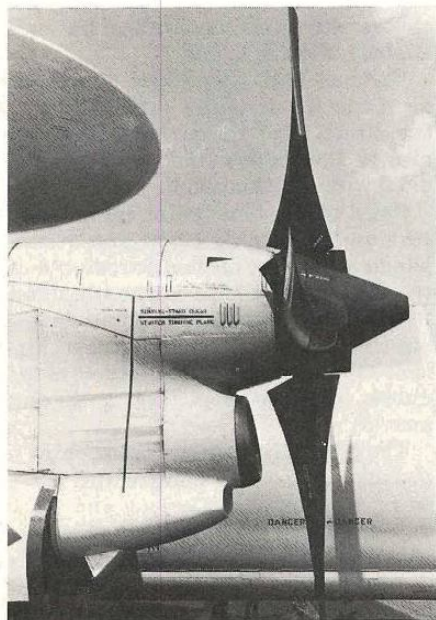
**Preparing the model.** It is important to wash a model before and after it is assembled. Oils from your fingerprints can affect the bonding of adhesives, fillers, and paints. I use dishwashing liquid in water and scrub the model with a rag or old toothbrush. A hair dryer set on low can quickly dry the model, but be careful that you don't get it too close; melted, warped models are difficult to fix.

It's often difficult to see tiny cracks, pits, and low spots on a model until it is primed. Regardless of what your final color is going to be, spray on a white or gray primer. Any abnormalities will pop out and can be corrected at this point. If you do find defects that must be corrected, don't forget to wash the model again before you apply the final colors.

**Weathering with an airbrush.** Outside of markings and special camouflage, most real aircraft, armor, ships, and cars are painted with spray guns. An airbrush is a small spray gun and it is the best tool to simulate a sprayed-on finish in miniature.

A newly painted machine begins to weather as soon as it leaves the factory. Sun, rain, dirt, gasoline, oil, salt water, mud, and temperature extremes affect paint. Consecutive aircraft off the assembly line, one stationed in Australia and the other in the Aleutians, will look vastly different after just one month of active duty.

Sunlight was the major weathering



FINESCALE MODELER: Burr Angle

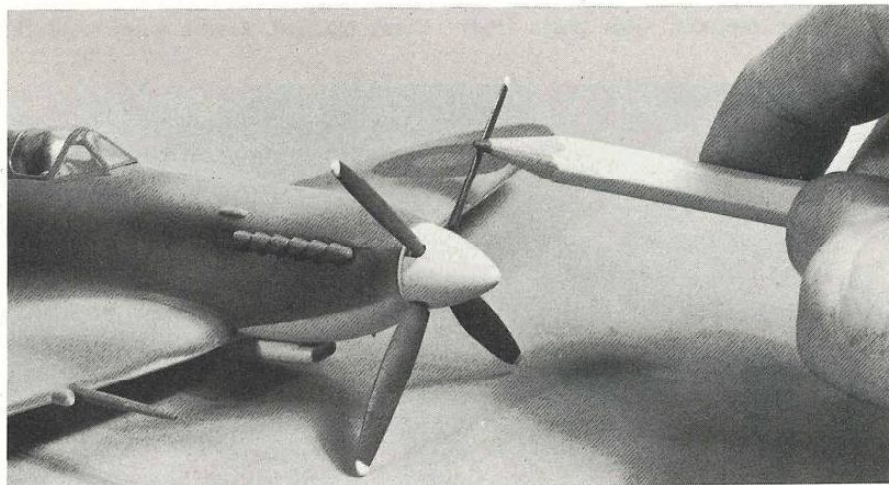


Fig. 2. A lead pencil can simulate wear on leading edges of metal propeller blades.

Fig. 1. Oil seeping out of the engine cowling on this E-2C Hawkeye has blown back across the panel. This stain can be made with a wash or pastels.





**Fig. 3.** Dick's P-40 shows how drybrushing can achieve a worn paint effect. The area on the wing next to the cabin gets a lot of foot traffic from pilots and ground crew.

factor on World War Two aircraft stationed in the Pacific theater. Olive drab was particularly affected by intense sunlight, fading to a light greenish brown. Rather than painting a model olive drab and leaving it outside in the sun (where it probably would melt), this fading can be made by lightening the base color. I add five drops of white or light gray per ounce of olive drab and airbrush the top of the aircraft (fuselage, wings, elevators). Then I add five more drops and paint just the top of the fuselage. I sometimes add a slight mottled effect to the wings and elevators.

Fabric-covered control surfaces faded at a different rate than painted metal. These areas can be painted a slightly different color to achieve this effect. Damaged ailerons, elevators, and rudders were replaced with parts from

other aircraft, and the difference between new and old paint on the same aircraft was easily seen.

Sunlight also oxidizes paint, producing a duller sheen. This can be simulated by overspraying the top surfaces of a glossy aircraft with a clear semi-gloss paint.

As an aircraft flies, the air rushing around it produces nearly imperceptible, but inevitable, wear. To simulate this effect I airbrush my aircraft models from front to back, parallel to the direction of flight and the eroding slipstream.

**Washes.** A wash can subtly emphasize panel lines, flying surface hinge lines, and depressions. I make washes using Polly-S paints diluted with water. A water-soluble wash won't affect the painted surface and mistakes are easily cleaned. A thin wash of black,

dark gray, or dark brown flows off high points and accumulates in depressions. Washes can be used to produce fluid spills around fuel tanks, coolant, and oil filler caps. Fluid leaks can be simulated with washes, too. Sometimes oil seeps out of an engine and escapes between panels where the slipstream blows it back across the airframe, Fig. 1.

**Pencil and sandpaper.** Prop blades usually have some small nicks on the leading edges, but big dents are considered major damage. After the prop is painted, I rub 600-grit sandpaper across the chord of the blade. Then I rub a pencil point along the leading edge of each blade and blend this in with my finger, Fig. 2. This gives a worn, metallic look to the blades.

**Drybrushing.** Wear can be simulated by drybrushing a light color over raised details and areas that are subject to repeated use, Fig. 3. White is too light for drybrushing so I use a cream or faded yellow color. Aircraft generally have few bolts, rivets, or raised areas that impede airflow, but access panels and walkways can receive a combination of wash and drybrush to emphasize footprints, oil, and grime. Armor, on the other hand, has many areas that can be highlighted by drybrushing. Track links, road wheels, drive wheels, and fenders are all subject to wear and tear.

**Exhaust and gunpowder stains.** The effects of super-heated hydrocarbon fuel residues on paint and metal surfaces are varied, Fig. 4. Exhaust stains range from very dark gray to almost white, so avoid using black paint for exhaust. Refer to photos of the aircraft you're modeling. Exhaust stains are extreme on some types of aircraft, while others show no stains at all.

Gunpowder residues range from dark gray-brown to light gray. Don't overdo it; most gunpowder stains are minimal. The hot shells falling from the ejection chutes also stain the surface, but only slightly, Figs. 5, 6, and 7.

Exhaust and gunpowder stains can be made by carefully airbrushing in the direction of the airflow. They can also be produced with pastel dust applied with a cotton swab.

**Paint chips.** Most paint chipping occurs on the leading edges and around panels which are opened or replaced often. Small paint chips can be simulated with silver paint and a small brush, but this is easily overdone. A few chips look more realistic than lots of chips, unless you are depicting a derelict aircraft.

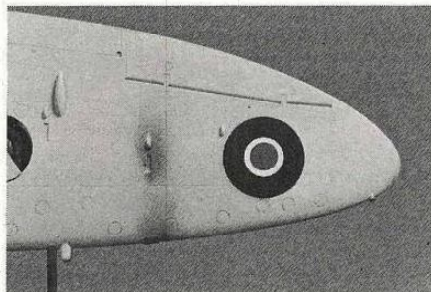
The best way to make paint chips is to make real, scale paint chips! First, paint a metallic undercoat and let it dry thoroughly. Then apply the color you want over the undercoat. Before the paint dries (usually 5-10 minutes), burnish a piece of tape to the leading



**Fig. 4.** Larry Schramm's 1/32 scale F4U-5N conversion features realistic exhaust stains applied with an airbrush.

FINESCALE MODELER: Paul A. Erler



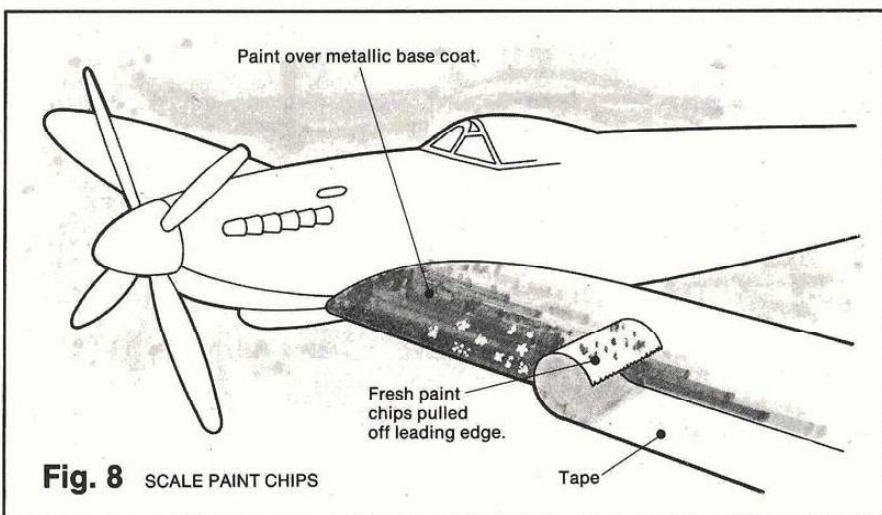


FINESCALE MODELER: Paul A. Erler



FINESCALE MODELER: Paul A. Erler

**Figs. 5, 6, and 7.** Gunpowder stains shouldn't be overdone. Stains from muzzle blast are the most noticeable but the shell ejector chutes also exhibit powder stains. An airbrush or pastels can be used to produce these as well as oil stains from cowlings, wing folds, and canopy rails.



edge and quickly pull it away. The tape pulls off minute pieces of the top color, allowing the metallic undercoat to show through, Fig. 8. It may take some experimentation to determine how long to wait before applying the tape.

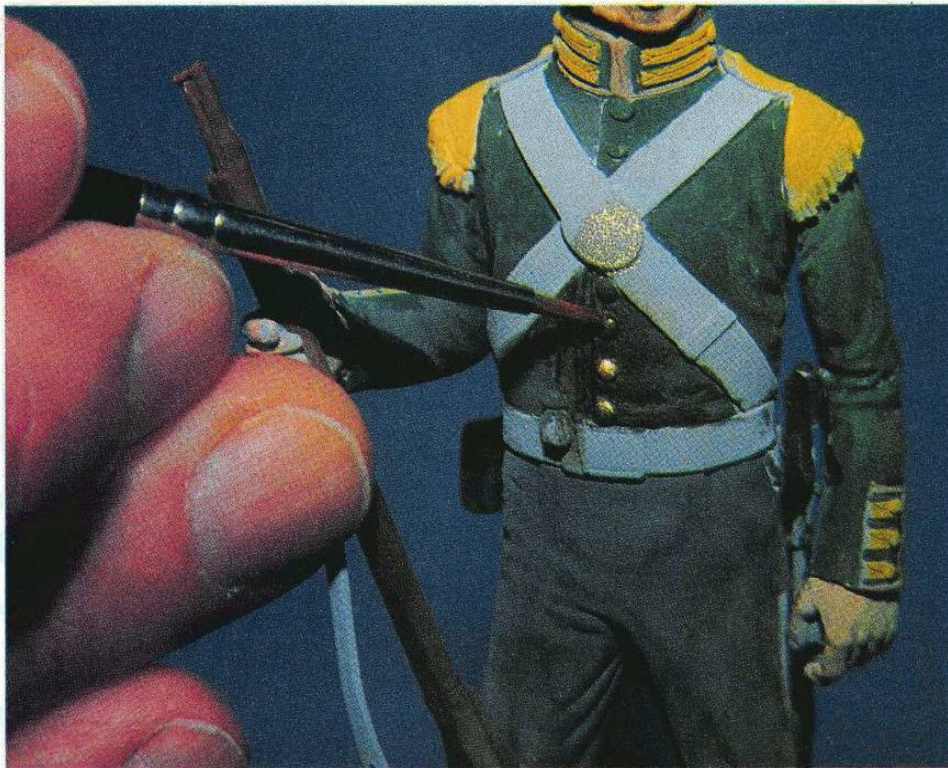
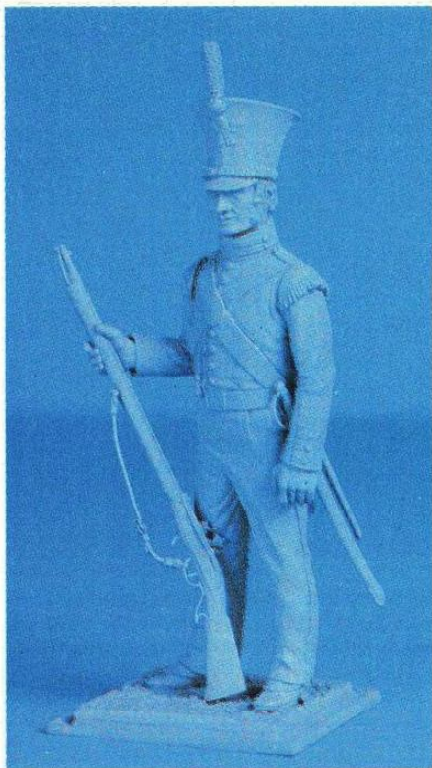
Detailing needn't be as complicated as scratchbuilding. Little touches like these can enhance a model's appearance without taking a lot of time and effort.

**FSM**

**Day-glo (fluorescent) paint deteriorates rapidly.** This Royal Canadian Air Force Avro CF-100 Canuck's day-glo panels have faded out, leaving a yellowish stain on the white undercoat.







(Above left) The 90 mm Series 77 Marine after cleanup, assembly, and a coat of primer. (Above) Applied over an acrylic color undercoat, oils bring the figure to life. Here oils are being applied to the jacket using the "color blocking" technique described in the text.

# Painting your first figure in oils

Basic techniques from three accomplished figure painters

BY BOB KNEE, LARRY MUNNÉ, AND BILL OTTINGER

**"WHY OILS?"** is one of the first questions asked by beginning figure painters. That's a complex question, but if there could be a single answer, it would be "their versatility." Although plenty of beautiful figures have been painted using hobby enamels or acrylics, the range of colors, effects, and textures possible with oils is unmatched by any other type of paint.

The term "artist's oils" should not deter modelers from trying them. At first the color names may seem a bit strange and the terms foreign and disconcerting — artists who paint with oils on canvas talk of "cadmiuims," "chromes," "pthalos," and other exotic-sounding things — but there's no mystery to be solved. Painting figures with oils is altogether different from painting on canvas, and painting figures is what this article is about. We will concentrate on specific colors, mediums, and techniques that work best with military miniatures.

**What you need to get started.** When you walk into an art supply store to purchase oils, take a list, Fig. 1. Otherwise, you risk being overwhelmed by

the selection. Several companies offer oils, and there are hundreds of colors. As you gain experience you'll most likely add colors to your palette, but it's best to start with just a few. With only a few exceptions, the colors we recommend are Winsor & Newton Artists' Oils, Fig. 2, which all three of us prefer due to their fine pigmentation. In addition, you'll need acrylic paints such as Polly S, available in hobby shops.

There are three kinds of Winsor & Newton oils: Artists' oils, London oils, and alkyds. The Artists' Oils are top quality and well worth their premium price; the London oils are of lesser quality, and the alkyds are a fast-drying variety not particularly suited to modeling.

Since most oils dry glossy, you'll need to purchase a product to reduce the gloss. Dorland's\* Wax Medium, Fig. 2, is a ceresin wax which, when mixed with oils, yields a matte or eggshell finish. We add from 25 to 50 percent Dorland's to paint, mixing thoroughly. You need not add Dorland's to

\*Dorland's Wax Medium, Siphon Art, 74-D Hamilton Drive, Ignacio, CA 94947.

shading and highlighting colors since they will assume the properties of the wax when brushed over the base color beneath them.

Another way to reduce gloss is to add small quantities of Grumbacher's Oil Painting Medium I. In fact, it can be used to thin oils, instead of turpentine. Oil Painting Medium I is a less-effective flattener than Dorland's, but because the amount of sheen is a matter of personal taste, you may find it to your liking. No matter what you've read elsewhere, if your goal is a flat or semimatte finish, never add linseed oil to the paint; its effect is exactly the opposite of the flattening mediums.

You'll need gum turpentine to thin the paint and clean brushes. This is available at any art supply store; the brand is not important, but make sure you get real turpentine, not mineral spirits or some other paint thinner.

**Brushes and palettes.** Among experienced figure painters brushes are a subject unto themselves. The main thing to bear in mind is that they must always be top quality — second- or third-best simply won't do. Top-of-the-





Bob Knee painted this stock Series 77 90 mm metal figure using the techniques described in the article. The subject is a Sergeant of U. S. Marines, 1836, from the Series 77 "The Americans" line.

line red sable brushes, Fig. 3, are expensive, but they are what you need. Some of the newer, synthetic brushes are acceptable, but until you have sufficient painting experience to evaluate them and to develop favorites, stick with red sable, Fig. 4.

Painting figures is hard on brushes, so plan to buy new ones regularly, and when a brush is shot, throw it away. It's sheer foolishness to turn out an inferior figure because you can't bear to part with "old faithful" — in spite of the fact that no two hairs go in the same direction!

You'll also need palettes for mixing paint. Every painter has his favorite — newspaper, bond paper, glass, porcelain — but all three of us prefer either



Fig. 2. There are no secret ingredients — most of the supplies you'll need to paint figures in oils should be readily available in stores in your hometown. Clockwise from left: Dorland's Wax Medium, an additive for oils that flattens their natural glossiness (available at most art supply stores); Floquil and I/R Miniatures figure primers and I/R primer thinner (hobby shop items); coated freezer wrap for making disposable palettes (grocery store); Winsor & Newton Artists' Oils, the authors' favorite among several available brands of high-quality oils (art supplies); and one of several two-part A + B epoxy putties for use as a filler in the joints of a multi-part figure. If your hobby shops don't stock epoxy putty, try a hardware or plumbing supply store.

freezer paper, Fig. 2, which can be purchased in any grocery store, or the disposable paper palettes available from art supply houses. The paint is mixed on the slick, coated side of the palette.

**Selecting and preparing a figure.** Even if your main area of interest is small-scale modeling, for your first figure try something fairly large. A metal 90 mm figure is an excellent choice, and there are dozens of good ones.

Even a cleanly cast figure requires from one to three hours of cleanup, and although you'll meet modelers who say you can "paint it on" or "cover it up," we disagree. If you want results you'll be proud of, resist the urge to start painting immediately and spend some time removing seam lines, sharpening detail with file and knife, emphasizing hair and fur, and removing all seams

Burnt Sienna	Ivory Black
Burnt Umber	Lamp Black
Cadmium Red Light	Naples Yellow
Cadmium Yellow	Prussian Blue
Cadmium Orange	Raw Sienna
Cerulean Blue	Silver (Weber**)
Chrome Green	Titanium White
Gold (Liquitex*)	Ultramarine Blue
(All Winsor & Newton Artists' Oils except as noted)	
Winsor & Newton, 555 Winsor Drive, Secaucus, NJ 07094.	
*Liquitex — Binney & Smith, Easton, PA 18042.	
**Martin F. Weber Co., Philadelphia, PA 19144.	

Fig. 1 A BASIC OIL PALETTE FOR PAINTING FIGURES

and bits of molding flash from the parts.

When you've completed the cleanup, buff the figure lightly with very fine emery paper, No. 00000 steel wool, or a wire brush accessory in a motor tool. Be careful not to wear away small details such as buttons or buckles.

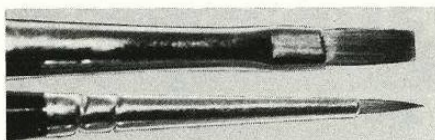
Pre-fit all parts of the figure before gluing them together. Even though it takes longer to set than the cyanoacrylate super glues, we prefer a 5-minute epoxy for assembling metal figures, mostly because epoxied joints are less prone to break when the figure has to go along on a trip. Be sure to mix the 5-minute epoxy thoroughly.

Large parts and those subject to stress during handling should be pinned as well as glued. For example, to pin an arm, Fig. 5, drill a hole in the arm and a corresponding hole in the shoulder,

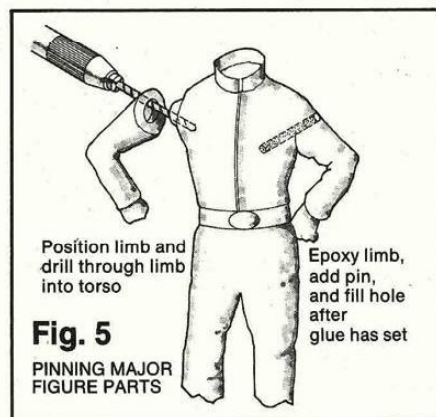


**Brights:** red sable (short, square tip); No. 3, No. 1, No. 0, Grumbacher® series 626B  
**Rounds:** red sable (cylindrical with pointed tip); No. 1 and No. 3, Grumbacher series 626R  
**Detail:** any Winsor & Newton or Grumbacher No. 000 or No. 0 red sable brush will produce good results.  
 \*M. Grumbacher, Inc., 460 West 34th Street, New York, NY 10001.

**Fig. 3** A STARTER SET OF BRUSHES



**Fig. 4.** You can't paint quality figures with-out quality brushes. The red sable brights and rounds listed in Fig. 3 and shown above are typical of what you'll need.

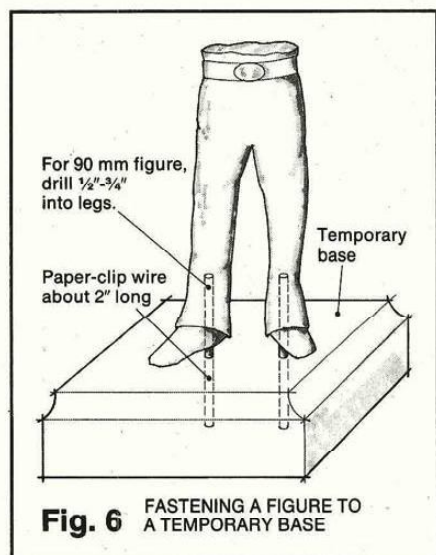


**Fig. 5**

PINNING MAJOR  
FIGURE PARTS

insert a length of pin or stiff wire, and glue. A very strong bond will result.

Rarely will parts join perfectly. Fill gaps with A + B epoxy putty\*, Fig. 2, or a filler such as Squadron Green Stuff. One unusual filler we find handy



**Fig. 6** FASTENING A FIGURE TO A TEMPORARY BASE



(Above left) Fig. 7. The Series 77 Marine looked like this after it was undercoated with Polly S acrylic colors. (Above right) Fig. 9. When properly painted, very little of the whites of the eyes should show. This 80 mm Confederate drum major is an original figure sculpted by Bill Ottinger. Note that we've blown the photo up larger than the figure to better show off Bill's painting techniques.



is Biggs A + B paste epoxy. This two-part material has the consistency of toothpaste and dries rock-hard in about 6 hours. It has all the good qualities of the A + B putty, plus it helps glue the parts together. Whatever filler you choose, when it is dry file and buff the joint to a smooth surface to match the rest of the figure.

**A temporary base.** Before priming and painting, mount the figure on a temporary base. The material and size are unimportant, but the temporary base should be comfortable to hold, since you will be holding it a lot! Two of us use wooden blocks, the other prefers a heavy cardboard tube. To fasten the figure to the base cut a 2" length of stiff wire (a paper clip is about right), drill a hole in the figure's heel, and insert the wire 1/2" to 3/4" into the leg, Fig. 6, gluing with cyanoacrylate glue. Drill a

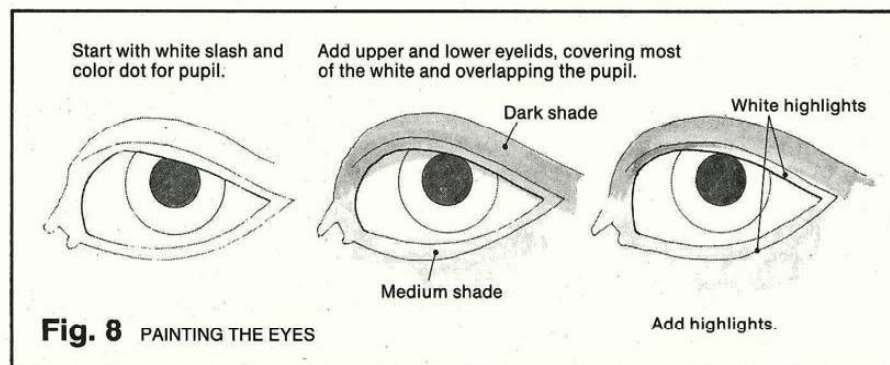
corresponding hole in the base and glue the figure into it. From now on you will hold the base; you need not touch the figure itself again until it is completely painted and dry.

**Priming.** Metal figures should be primed to prevent "lead disease," a chemical oxidation that can ruin painted metal figures. Even though some alloys are not susceptible to this reaction, we recommend priming all metal figures. I/R Miniatures\*\* makes an excellent primer, and Floquil has gray and white figure primers in spray cans, Fig. 2. Whatever product you use should be applied in a thin but complete coat and allowed to dry for 24 hours before painting over it.

**Undercoating with acrylics.** Undercoating, an important coloring step, has nothing to do with oils but provides a color subbase over which the same

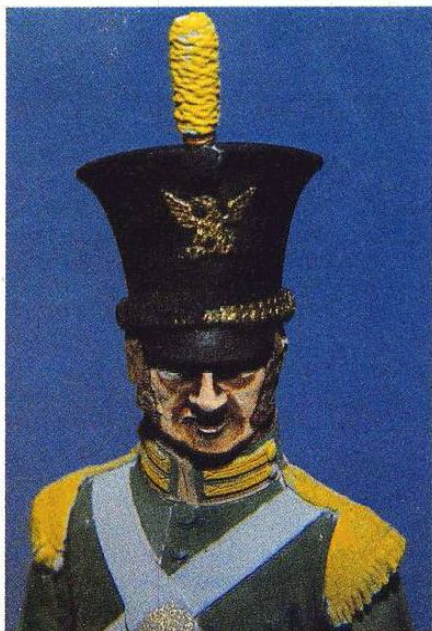
\*Biggs A + B epoxy putty, Applied Plastics, 612 East Franklin, El Segundo, CA 90245.

\*\*I/R Miniatures, P. O. Box 89, Dept. M, Burnt Hills, NY 12027.

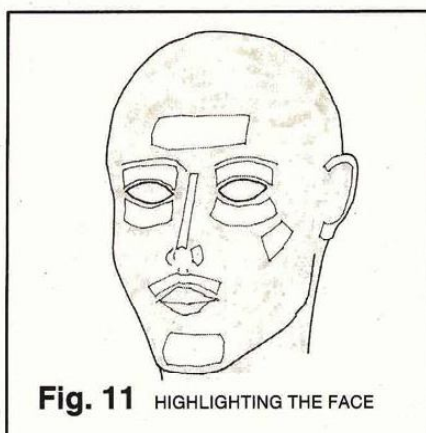


**Fig. 8** PAINTING THE EYES





**Fig. 10.** Here the shading color for the face, thinned Burnt Umber, has been applied over the dried, flesh-colored acrylic undercoat.



**Fig. 11** HIGHLIGHTING THE FACE



**Fig. 13.** A color wheel is an indispensable tool for mixing all kinds of paints, and is especially handy if you're getting started in figure painting. This one, from Grumbacher, sells for less than \$3.00.

colors of oils are added. As rich as oil colors are, when applied in thin coats they do not cover well; in fact they are almost translucent if painted directly over a light-colored primer. Undercoating prevents the primer color from "bleeding through" and affecting the colors of the oils.

Our preference for undercoating is Polly S acrylic, which covers beautifully, does not "lift" or dissolve when oils are applied over it, and provides an excellent bonding surface for oils. Most other acrylics are also acceptable, but avoid enamels, oil-based hobby paints, or tempera undercoats — applying oils over any of these will cause them to lift.

The undercoat colors should be approximately the same colors as the oils that will be applied over them later, flesh under flesh, blue under blue, and so forth. Undercoat every part of the figure with Polly S, applying the paint just thick enough to cover without obscuring detail. After undercoating the figure will look like a crude first attempt at a painted figure — all the colors will be there, but with no shading or highlighting, no lifelike quality at all, Fig. 7.

**Painting the face.** Now you've got a mounted, primed, and color-undercoated figure. Most painters begin with the face because it establishes the character of the figure, which helps set the tone for painting the uniform. For new painters, starting with the face also has the advantage of tackling the hardest job first.

Begin the eyes by adding a slash of

white for each eyeball. To keep the eyes crisp, use Polly S (oils tend to build up rapidly around the eyes). Don't be concerned with the shape of the eyeball yet. Next, dot in the pupils with Polly S Dark Brown, Dark Blue, or black, keeping them small and evenly spaced.

The next step is important since it



**Fig. 14.** Much of the lifelike quality of this Historex 54 mm sapper painted by Larry Munné is due to Larry's careful exaggeration of his shading and highlight colors. Here again we've reproduced the photo larger than the figure to help you see how it was painted.

eliminates the dreaded "frightened-stare syndrome" often found on figures. Using Polly S Dark Brown, carefully shape the upper and lower eyelids, narrowing the white of the eye until only a thin line remains and part of the eyeball is obscured by the eyelid, Figs. 8 and 9. For now, don't worry about the thickness of the eyelids; we'll come



**Fig. 12.** Like faces, hands come in for shading and highlighting, too. This close-up shows the hands of the Scythian archer featured on this issue's cover, another original 80 mm figure sculpted by author Bill Ottinger.



back and narrow them down later.

### Mixing and applying flesh tones.

Now we can reach for the oils. Dilute a small amount of Burnt Sienna with turpentine or Grumbacher's Oil Painting Medium I to make a thin, watery wash, and carefully outline the face at the hairline and under the hat. Apply the wash to the eye sockets, around the nose, under the chin and jawline, between the lips, and in the ears, Fig. 10. This is your shading color and should be applied before the flesh tone.

For flesh tones we use different approaches. One of us begins with pure

Grumbacher Flesh straight from the tube, adding highlights as described below. Another, more common, approach is to mix your own flesh color. Every painter eventually develops his own flesh tones, but this formula provides a reliable starting point:

5 parts Naples Yellow  
2 parts Burnt Sienna  
2 parts Raw Sienna  
1 part Cadmium Orange  
1/10 part Cadmium Red

Mix a small amount of this formula, but don't add Dorland's Wax Medium, because faces and flesh are not really

flat. The consistency of the paint can vary from as thick as it comes out of the tube to thinned considerably; the choice is up to you. Paint the remainder of the face with the flesh formula, blending it into the Burnt Sienna shading color applied earlier. Use the flesh color to carefully narrow the Polly S Dark Brown eyelids down to hairlines surrounding the eyes. Let all of this dry for 24 hours.

Next, add facial highlights, Fig. 11, with a mixture of Naples Yellow and white on the bridge of the nose, nostril pads, cheekbones, forehead, chin, ears, upper lip, upper eyelids, and lower eyelids. Blend these highlights carefully into the flesh color. Add a touch of red to the highlight color and paint the lower lip with it. Finally, add a still-lighter shade of the highlight color to the tip of the nose, tip of the chin, upper cheekbones, and earlobes.

The hair can be any realistic color, but keep in mind that its base color should be a little darker than what you first envision. When the base color has dried completely, gently dry-brush the raised detail to produce realistic highlights.

Next, paint the hands with the basic flesh formula. After 24 hours, highlight the knuckles and paint in the fingernails, Fig. 12.

**Mixing uniform colors.** Now let's look at the uniform. All clothing colors should be mixed with Dorland's Wax Medium to achieve a flat finish. Always mix small quantities of paint; a pea-sized dab is usually the most you will need of any one color.

For uniforms you will need colors that do not come ready-mixed, and this is where the versatility of oils comes into play; while the military colors available in other mediums are limited, oils can achieve an unlimited range of shades and color mixes.

Because every uniform is at least slightly different, at this point you need to learn some basics about colors and how to mix them. We recommend obtaining a color wheel, Fig. 13, and studying it. The color wheel (Grumbacher calls its wheel, No. B420, a "Color Computer") is a chart that explains the relationships of colors, and you can use it as your color-mixing bible. Once you understand the basic rules, you'll be able to mix any uniform color you want.

One of the most important aspects of color mixing is understanding that black is not always used to darken or white to lighten. For example, the base color on the jacket of the Series 77 Marine, page 57, was Chrome Green with a touch of Prussian Blue or Burnt Umber or black; the highlight color was a mixture of Chrome Green and Cadmium Yellow with only a little white

## WHAT WENT WRONG? — EIGHT QUESTIONS BEGINNERS ASK

1. Q. Everything else came out pretty well, but the hair on my figure doesn't look realistic at all. Why?

A. The trouble may not be in your painting, but in how you prepared the figure. All hair (including beards and mustaches) on most metal or plastic figures needs to be worked over with a sharp hobby knife to deepen it and add definition. This re-engraving will enable you to highlight the hair realistically with a dry-brush technique when painting it.

2. Q. I've tried painting with artist's oils before, but they seem to build up and obscure details. What am I doing wrong?

A. Artist's oils do not have the free-flowing qualities of the hobby enamels and bottled paints you may be used to. Oils must be brushed out thin, using just enough paint to cover the undercoating. "A little dab'll do ya."

3. Q. After I paint the eyes my figures have a popeyed, "thousand-yard" stare. What causes this?

A. Too much white is showing. The stare can be eliminated by bringing the upper eyelid down over the pupil. Cover up at least one-fourth to one-third of the top of the pupil, and bring the bottom eyelid up to cover a little of the lower part of the pupil as well. Look at people's faces in magazines to see how little white shows. Some figure painters even advocate making the eyes mere slits with no white showing at all.

4. Q. When I try to highlight certain colors, they look washed out. Red, particularly, is a problem in this respect. Why does this happen, and how can I avoid it?

A. Adding white to make a highlight color produces a lifeless pink with most reds, and brown and blue are problems, too. Try using a couple of different yellows and see if you like the results. A few figure painters advocate not highlighting or shading red at all.

5. Q. The first figure I painted turned out glossy and unrealistic. How can I prevent this in the future, and is there anything I can do with the glossy figure I have?

A. Two popular remedies for glossy oils are additives for the paint: Dorland's Wax Medium and Grumbacher's Oil Painting Medium No. 1. Some painters bake freshly painted figures in an oven set on very low heat or in a homemade drying oven (basically, a box with a light bulb inside). Don't

use wax medium if you plan to bake the figure — the wax melts! Others spray their completed figures with a flat coating such as those used as final finishes on aircraft and armor models.

6. Q. How can I paint a leather item to make it look realistic?



A. This depends on whether the figure represents a man in the field or in a barracks. If the figure is supposed to be in the field, add a flattening agent to the paint to dull the shine. For the higher shine of spit-and-polish barracks life, apply the paint straight from the tube, without additives, or try adding a drop (one, no more) of linseed oil. You can also apply Polly S Gloss Finish after the oils have dried thoroughly.

7. Q. I know one of the big advantages of oils is their long drying time, but how can I make them dry faster if I want to?

A. To a small amount of paint, add one drop of Grumbacher Cobalt Drier (Linoleate) using the end of a round toothpick as a dropper. Mix well.

8. Q. I've done "everything in the book" — and in your article, too. Why do my figures seem lifeless compared to the good ones I've seen?

A. Without seeing your figures it's hard to guess, but frequently figures seem lifeless when there is not enough variation in color between highlights and shadows. Try being bolder in mixing your highlight and shadow colors; when you think you've adequately highlighted and shaded your figure, try going a bit further.



thrown in. The shading color was a mixture of Chrome Green with lots of Prussian Blue or Burnt Umber, not black, even though the black would create a less-brilliant hue.

The basic rule is that adding black or white will "deadens" any color. Instead, if a complementary color is used for lightening or darkening (yellow with green, blue with green, red with yellow, and so forth) the resulting color will be much more lifelike.

**Avoiding muddled colors.** One of the challenges in painting whites and grays with oils is avoiding the muddiness that can be caused by blending several colors. The Marine's trousers (page 57 again) are medium-gray with buff stripes, so it's best to begin by painting the stripes with Polly S. This eliminates the need to lay white or gray oil over buff oil, which could result in a muddled buff color.

To enhance white, add a touch of Prussian Blue or Raw Sienna to it. This not only produces a more pleasing white for an article of clothing, but also allows you to use pure white as the highlight color. Medium gray can be highlighted with Cerulean Blue and white for an added touch.

The general rule here is to keep your color formulas simple. The more colors you blend, the nearer you get to a muddy gray. Even if you come up with the exact shade you want by mixing several colors, adding the final highlight color may turn the formula a sludge gray, ruining the whole effect.

Finally, remember that you are working in miniature. Highlights and shading must be carefully blended and they must be slightly exaggerated, Fig. 14. A common fault among beginning painters is timidity; they fail to achieve the necessary over-contrast, and the result is often a lifeless figure.

**Laying on paint — two ways.** There are two basic methods for painting in oils, Fig. 15. Two of us use what is known as the "wet-on-wet" method. For example, to paint the Marine's green jacket, the entire jacket would first be completely painted in the correct medium dark green. Then, using the same color darkened with black or Burnt Umber, the shadow areas would be painted *over* the base coat, blending as you go. The highlights on ridges, folds, and protrusions are added last and blended into the base coat below.

The other method is "color blocking." Using the same example, with color blocking the basic color and the shading and highlighting colors would each be painted onto its applicable area, then blended together. Colors are not applied over one another; instead, distinct patches of color — color "blocks" — are applied adjacent to one another and blended at the edges.

Choosing between the two methods is up to you, but on your first figure in oils the color blocking method is less prone to muddy the colors, a common beginner's problem. After you've gained experience in painting with oils, you may find that switching to the "wet-on-wet" method better suits your painting style.

Regardless of which application method you choose, one of the great advantages of oils is their ability to make gradual and subtle color transitions from the base color to the shading and highlights. Because oils dry slowly, you can take your time to make subtle and realistic color gradations — and you can even rework an area for days after first painting it.

Always apply oils sparingly. A common mistake among beginning painters is to apply too much paint, which builds up rapidly, obscuring detail and preventing smooth application. Oils do not flow like enamels or acrylics; instead, they must be brushed out to achieve a smooth, even coating. Once you get the hang of it, you'll be surprised how much area you can cover with what seems like only a tiny dab of oil color.

**Adding details.** After the face and the large portions of the uniform have been painted you can begin working on details. These were undercoated earlier, remember, so the next step is to paint over them with oils. Paint dull

metal and leather items such as shoes, spats, cartridge boxes, scabbards, and some headgear in various shades of dark gray and blacks, varying the color of each item slightly to produce pleasing contrasts. Shade and highlight each detail just as you would any other piece of the uniform. When the oils are completely dry you can add a slight gloss to leather, metal, and other appropriate areas with Polly S Gloss Finish.

We have two favorite products for painting bright, metallic surfaces such as swords and buckles. The first is Liquitex Gold (Fig. 1), which is applied, allowed to dry, then coated with Polly S Gloss. The second is Rose's Gold Powder and Varnish\*, which instantly produces a bright, metallic finish. For a realistic effect on metal buttons outline them first with Burnt Umber or Prussian Blue, then leave the fine outline intact when you add the brass or gold color.

**FSM**

\*Rose Miniatures, 15 Llanover Road, Plumstead, London, SE18 3ST, available from the Soldier Centre, P. O. Box 38, West Roxbury, MA 02132.

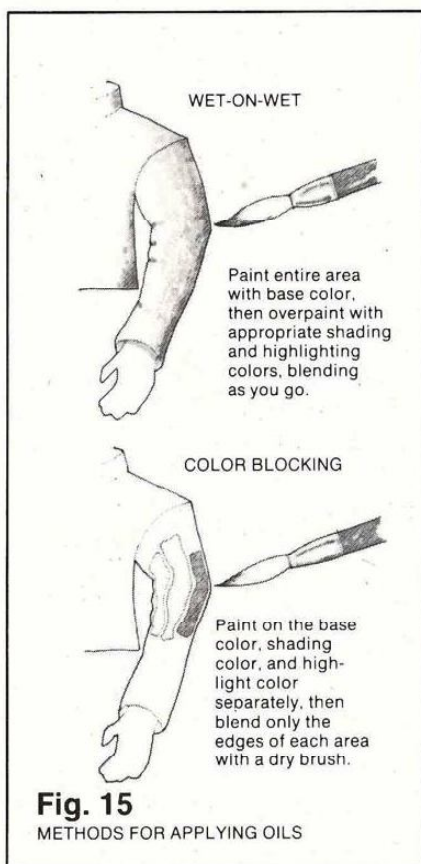


## Meet Bob Knee, Larry Munné, and Bill Ottinger

Bob Knee (on the right in the photo), an ex-Marine and now a retired attorney, lives in Winter Park, Florida, with his wife Eleanor. Bob has won awards for his figures at every major U. S. figure show, and he now devotes many hours of his painting effort to the Series 77 line of 90 mm figures. Bob provides Series 77 with much of the background material for its new releases, paints the master figures for the line, and enjoys converting them to original poses.

Larry Munné (left in the photo) is a medical technician. He and his wife Glynnell live in Inverness, Florida. Born in the Dominican Republic, Larry served with the Special Forces in Vietnam. He is a student of color and art and one of the top U. S. figure painters in oils. Larry specializes in conversions and scratchbuilt figures in all scales.

Bill Ottinger's everyday job is serving as a bank vice-president and trust officer in Jacksonville, Florida. He is married and has three children. Bill (at center) specializes in Historex figures and original pieces, and he paints almost exclusively in oils.



**Fig. 15**  
METHODS FOR APPLYING OILS



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- A/6- Confederate sergeant, 1864
- A/7- Dragoon trooper, 1851
- A/8- Marine, 1942
- A/9- Infantry private, Civil War
- A/10- Cavalry officer, Indian Wars
- A/11- Infantry corporal, WWI, Europe
- A/12- Infantry sergeant, 1812-15
- A/13- Lancero de Los Angeles, 1856
- A/14- 1st Infantry, Vietnam, 1966-71
- A/15- Mountain Man, 1840, mounted
- A/16- Mountain Man, 1830
- A/17- Cpl., 1st Virginia Cavalry, 1861-65
- A/18- Midshipman, U.S. Navy, 1861-65
- A/19- Petty Officer, U.S. Navy, 1861-65
- A/20- Sergeant, U.S. Cavalry, 1876
- A/21- Private, U.S. Infantry, 1918
- A/22- Private, U.S. Infantry, 1898
- A/23- Sergeant, U.S. Marine Corps, 1836
- A/24- Sergeant, U.S. Army Paratroops, 1944
- A/25- 2d Lt., U.S. Marine Pilot, 1942
- A/26- Sheriff, 1880
- A/27- Private, U.S. Marine Corps, 1859
- A/28- Captain, U.S. Army Air Force, 1944
- A/29- Gen., Confederate Cavalry, 1862
- A/30- 1st Lt., U.S. Army Air Service, 1918
- A/31- Pvt., 5th N.Y. Zouaves, 1861
- A/32- Pvt., Louisiana Tigers, 1861
- A/33- Commander, U.S. Navy, 1945
- A/34- Capt., U.S. Lt. Artillery, 1863
- A/35- Lt., U.S.N. Carrier Pilot 1970's
- A/36- Sgt., U.S. Cavalry, 1861-65, mounted



A/36  
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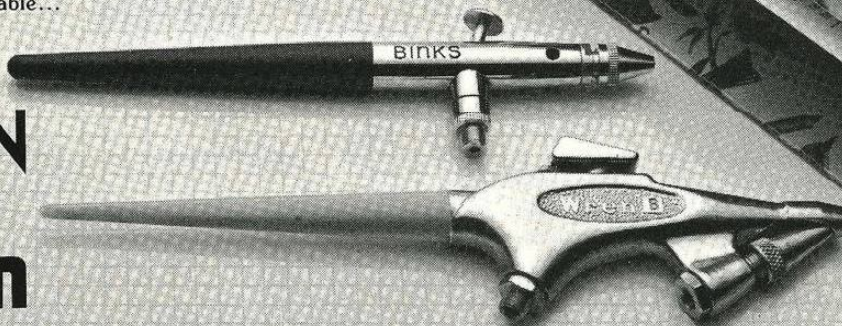
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BY BURR ANGLE



### Continental! Its Motors and its People

This 240-page, 8 1/2" x 11 1/2", hard-cover book by William Wagner, formerly Continental's director of public and employee relations, contains 306 photos and many graphs and tables. It is a candid, clearly written, well-organized history of Continental Motors, which was founded in 1902 and which continues to be a major producer of automotive, aircraft, tank, and industrial engines.

It is published by *Armed Forces Journal International* in cooperation with Aero Publishers, Inc., 329 West Aviation Road, Fallbrook, CA 92028, and is available from Aero for \$19.95.



### F-106 Delta Dart in Detail & Scale

The first Convair F-106 interceptor entered service in 1959 and a few were still operational with U. S. air defense units in 1983. There were two major versions, the single-seat F-106A (277 delivered) and the twin-seat F-106B (63 delivered).

Bert Kinzey's 8 1/2" x 11", 72-page, soft-cover volume contains 179 photos (44 in color), 1/72 scale five-view drawings of the F-106, and many tables and drawings of aircraft details. There are also kit and decal reviews, tips on how to convert an F-106A kit to an F-106B, and a bibliography.

The book is published by Aero Publishers, Inc.; the price is \$7.95.

### PBY Catalina in Action

Between 1935 and 1945, Consolidated manufactured 1,854 flying boats and 1,418 amphibians in the PBY Catalina series.

Originally designed as a maritime patrol plane, the Catalina has also been widely used for air-sea rescue, firefighting, and geophysical surveys.



This 50-page, 8 1/4" x 11", horizontal-format, soft-cover book by W. E. Scarborough, a Navy pilot with more than 1,700 flying hours in Catalinas, contains 107 black-and-white photos, 4 pages of color paintings (including covers) by Don Greer, three-view drawings of the PBY-2 and PBY-6A, and many detail drawings. The text covers all versions of the Catalina.

The book is published by Squadron/Signal Publications, Inc., 1115 Crowley Drive, Carrollton, TX 75011-5010; the price is \$4.95.



### Modern Fighters to Color, Cut Out & Fly

Bellerophon Books, 36 Anacapa Street, Santa Barbara, CA 93101, publishes a 56-page, 8 1/2" x 11", soft-cover children's book containing printed parts for card models of the F-16, MiG-25, F-15A, Sea Harrier, and Jaguar. The parts are printed in black, white, and gray on one side of each .0055"-thick page; assembly instructions are included. The models were designed (in no particular scale) by Nick Taylor and feature interesting assembly methods, so are entertaining projects for children and adults. The price is \$3.95 plus \$1.00 shipping per order.

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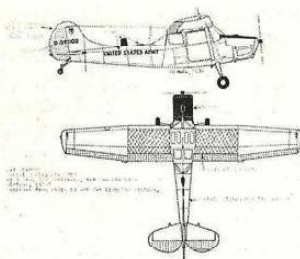


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to 35 hours and the planes had many structural problems, but the Fury gave the Navy valuable experience in learning to fly and maintain jet aircraft.

This 30-page, 8½" x 11", soft-cover book by Steve Ginter and Ron Picciani contains 62 photos (1 in color), 1/72 scale drawings, several tables of aircraft statistics, and a brief chronology of each Fury. The text includes recollections by Clyde Betts of short-lived Fury operations on board U.S.S. *Princeton* (all eight aircraft crashed or were otherwise inoperational after two days) and the Fury's participation in the 1948 Bendix Race.

The book is published by Steve Ginter, 1754 Warfield Circle, Simi Valley, CA 93063; the price is \$5.50.



### First Cavalry Division (AM) Aircraft in Vietnam, 1965-1971

Not a book, but a set of 16 unbound 8½" x 11" sheets, this plans set includes 1/46 to 1/80 scale drawings showing the color schemes and markings applied to U.S. Army aircraft of the First Cavalry Division in Vietnam. There are drawings by Peter W. Harlem of 15 helicopters and the Cessna O-1. Notes on the drawings give Federal Standard color numbers and explain the source of the data.

The plans are published by Peter W. Harlem, Cobra Company, 8842 Southwest 72nd Street, J-258, Miami, FL 33173. The price including postage is \$5.00.

### NAVAL FIGHTERS NUMBER EIGHT LOCKHEED C-121 CONSTELLATION



BY STEVE GINTER

### Lockheed C-121 Constellation

Although produced by Steve Ginter as part of his "Naval Fighters" series, this soft-cover, 8½" x 11", 78-page book actually covers almost all non-airliner versions of the Constellation. There are 251 photos (12 in color) showing Navy and Air Force Constellations equipped for airborne-early warning, transport, electronic warfare, reconnaissance, and experimental applications. The text includes essays on flying the Constellation by Bob Kowalski, D. H. Stoop, and Donal Born and the book also contains many Lockheed factory drawings of the plane and its subassemblies.

It is published by Steve Ginter; the price is \$13.95.



### Navy Air Colors

This book's subtitle, "United States Navy, Marine Corps, and Coast Guard Aircraft Camouflage and Markings, Vol. 1, 1911-1945," succinctly defines its subject matter. Written by Thomas E. Doll, Berkley R. Jackson, and William A. Riley, who quote extensively from Navy Bureau of Aeronautics documents, this 97-page, 8½" x 11", soft-cover book contains 236 photos (5 in color) and 16 pages of color illustrations by Don Greer and Thomas Doll showing aircraft and markings.

The text and photos show that just because a directive about colors and markings had been issued by some higher command, planes in any given unit may not have conformed to those orders until months later, if at all—this was particularly true during the early years of World War Two.

The book is published by Squadron/Signal Publications; the price is \$8.95.



by Richard Groh

### The Dynamite Gang

Written by Richard Groh, this 192-page, 8½" x 11", soft-cover book is a history of the 367th Fighter Group in World War Two. The title refers to the group's code name, "dynamite," in the Ninth Air Force's Order of Battle.

Consisting of a Headquarters and Fighter Squadrons 392, 393, and 394, the 367th entered combat in May 1944, flying P-38s on missions over France in preparation for the Normandy invasion. The group moved to advanced landing grounds in France in July and thereafter provided ground support and flew other fighter-bomber missions (at first with their original P-38s, later with P-47s) for the Third Army until the end of the war in Europe.

The book contains 357 black-and-white photos, many of which are snapshots of pilots and other personnel; these are interesting both as portraits and because they show details of uniforms and personal equipment. Other photos show aircraft markings, color schemes, and nose art.

The 367th compiled an admirable combat record and received two Distinguished Unit Citations—the text includes many mission



histories, all of which appear to be based on official sources and interviews with pilots. Several appendices include letters written in the early 1980s by 367th veterans describing their impressions of wartime service in the unit.

The book is published by Aero Publishers, Inc.; the price is \$12.95.



#### Finnair

This 298-page, 9" x 10 1/4", hard-cover book by John Wegg was published by the Finnish airline, Finnair, to celebrate its 60th anniversary on November 1, 1983. Founded in 1923 with the name Aero O/Y, Finnair's history is closely linked to the modern history of Finland — in those 60 years the country has survived German and Russian occupations, repaid all war loans, made all war reparations, and has evolved into a prosperous constitutional democracy.

There are more than 450 photos, posters, advertisements, and schedules (many in color), as well as aircraft rosters and route descriptions. The text (in English) explains Finnair's past and present operations — the airline now has a fleet of more than 30 aircraft and has made a profit for 35 of the last 37 years.

The book is available from Finnair, Mannerheimintie 102, Helsinki 25, Finland; the price is US\$29.95.



#### Huey

Lou Drendel's latest book is a pictorial history of the Bell UH-1 Iroquois series of civil and military helicopters. Originally designated HU-1 (hence the name Huey), the Iroquois entered service in June 1959. Since then more than 26,000 have been manufactured in a bewildering number of variants.

This 64-page, 8 1/2" x 11", soft-cover book contains 204 photos (36 in color), 2 pages of 1/72 scale drawings of UH-1s, and 8 paintings by the author showing color schemes and markings. The text includes a brief history of the helicopter's development, a description of the author's ride in an Illinois National Guard UH-1H, and several accounts by Vietnam veterans of their exper-

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Gloster E.28/39 Pioneer / Gloster Meteor

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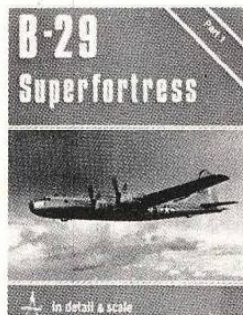
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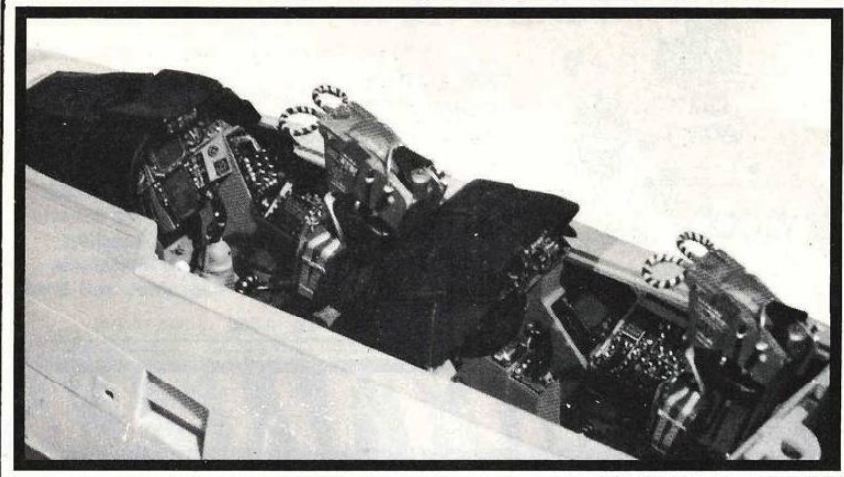
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The third and final volume of Bert Kinzey's study of the McDonnell Douglas F-4 Phantom II, this 72-page, 8 1/2" x 11", soft-cover book concentrates on Navy and Marine Corps versions, specifically the F-4B, J, S, and RF-4B. There are 223 photos (42 in color), including many close-ups of cockpit

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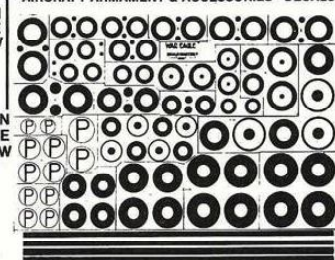
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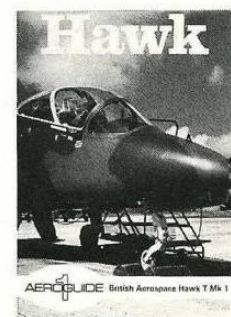
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interiors and other aircraft details, particularly those that varied from one version to another. These photos and the text make it clear that by the early 1980s many surviving Phantoms were patched together with parts from cannibalized aircraft.

The book also contains 1/72 scale drawings by Jerry G. Smith, reviews of 1/48 and 1/72 scale Phantom kits, and a list of decals available. It is published by Aero Publishers, Inc.; the price is \$7.95.



### Hawk

Roger Chesneau and Ray Rimell have announced a series of books called "Aero-guides"; each volume will focus on one modern British aircraft, will include many photos of one aircraft of the type, and will contain 1/72 scale five-view drawings by Steve Archibald.

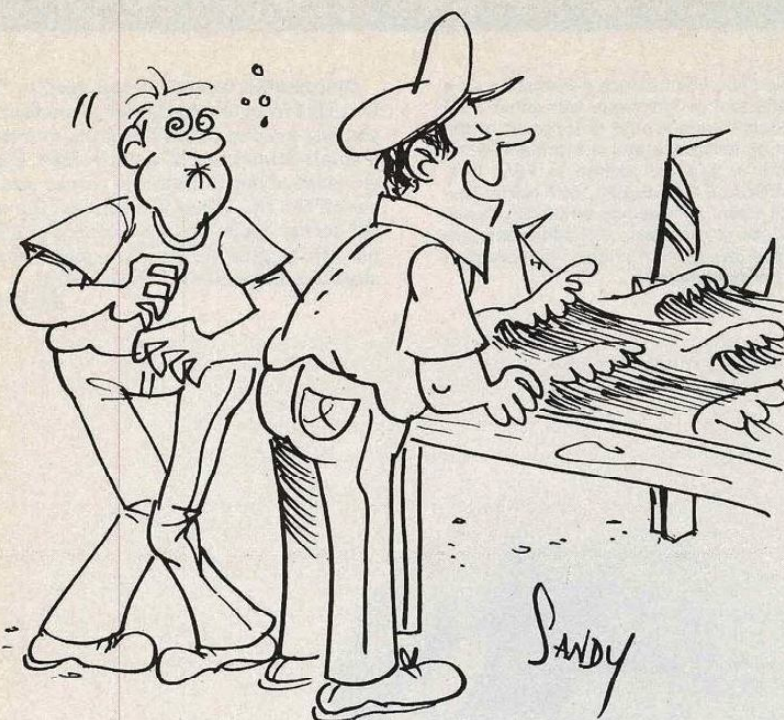
This book on the British Aerospace Hawk T Mk 1 is the first in the series. It is a 32-page, 8 1/4" x 11 3/4", soft-cover volume with 62 black-and-white photos, scale drawings, and data about markings and color schemes. The photos and drawings show a Hawk T Mk 1, of No. 63 Squadron, RAF Chivenor in August 1982 in great detail. A painting on the back cover shows this plane's color scheme.

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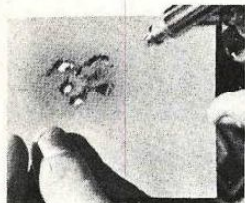
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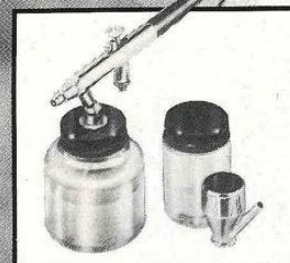


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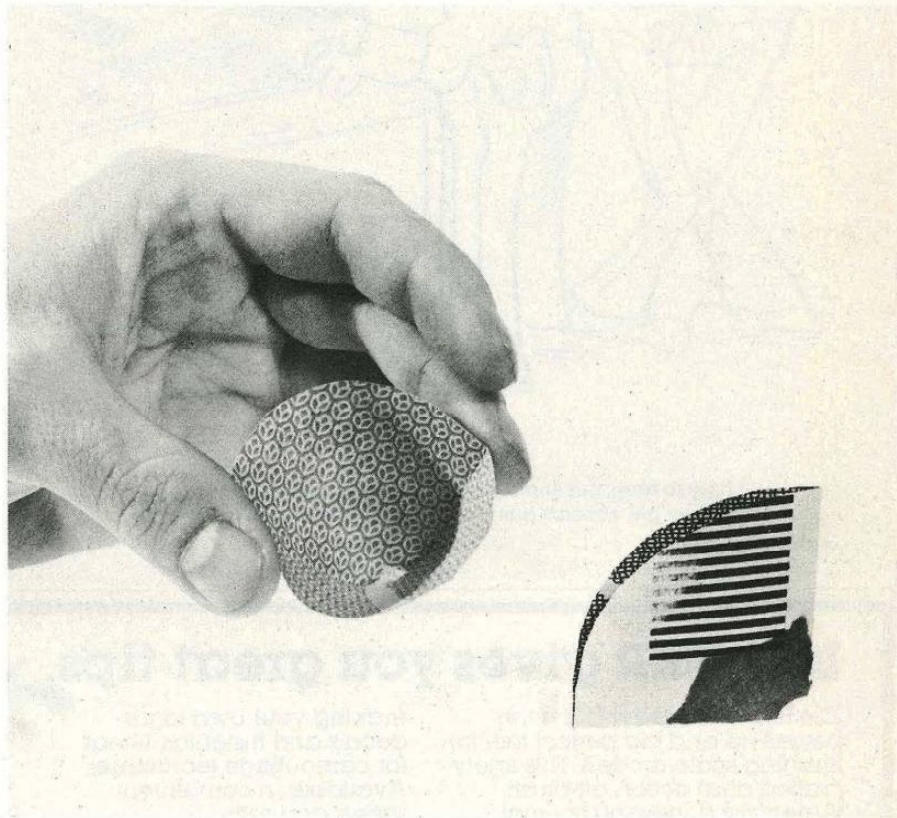
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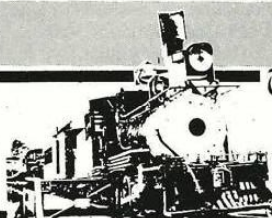
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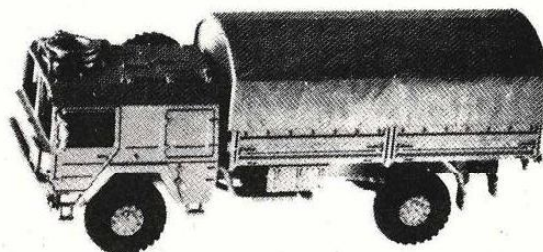
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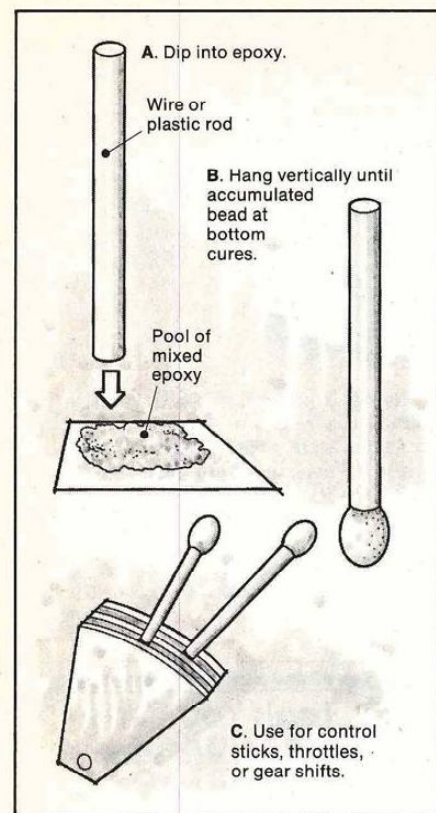
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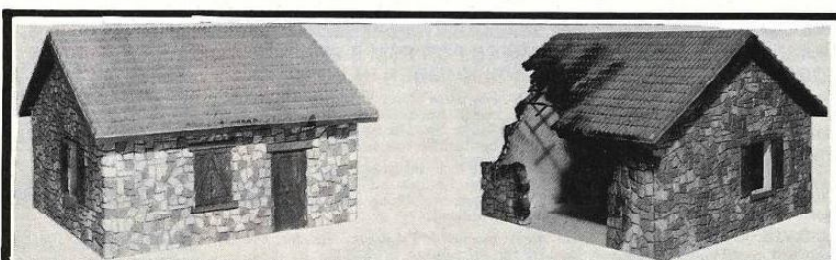


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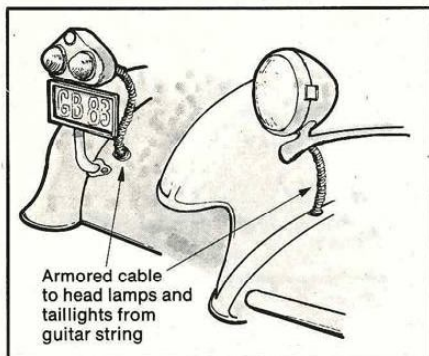


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concave bottom. Then I use a pin or toothpick to apply the super glue. After I have the glue I need, I hold the bottle upright and squeeze the corners, creating a vacuum inside which draws down any glue remaining in the nozzle.

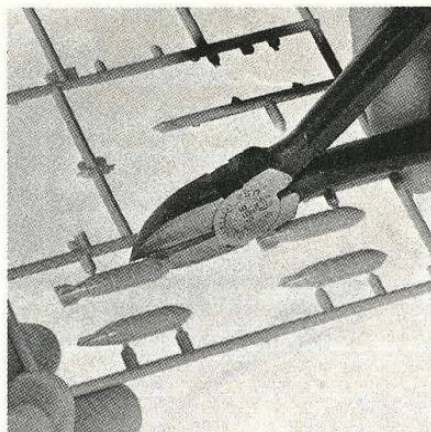
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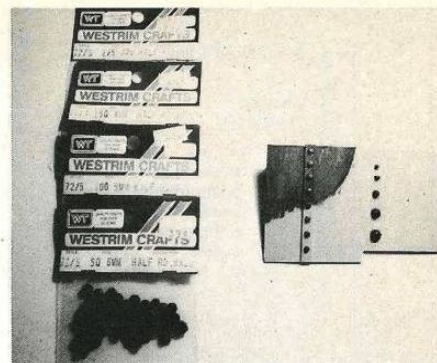
Armored cable to head lamps and taillights from guitar string

**Guitar strings.** The lower guitar strings (E, A, D, and G) are wire wound around wire. Small sections of broken guitar strings can make terrific-looking oxygen hoses for

aircraft cockpits, or armored electrical cable for large scale autos. It's easier to bend if the center wire is removed. *Giuseppe Bertocchi*



**Diagonal cutters.** Use diagonal-cutting pliers to chop plastic parts from sprues. They cut neatly and are safer than a knife. *Paul Boyer*



**Rivets.** You can buy small, plastic, half-round balls from craft stores to use for rivets on large scale models. Look for Westrim Crafts (Western Trimming Corp., Chatsworth, CA 91311) that come in 3 mm, 4 mm, 5 mm, and 6 mm sizes. Simply spear one with a sharp hobby knife, apply a little glue to the flat side, and place it on the model. A light sanding and paint will cover the mark from the knife.

Karl Machtanz  
FSM

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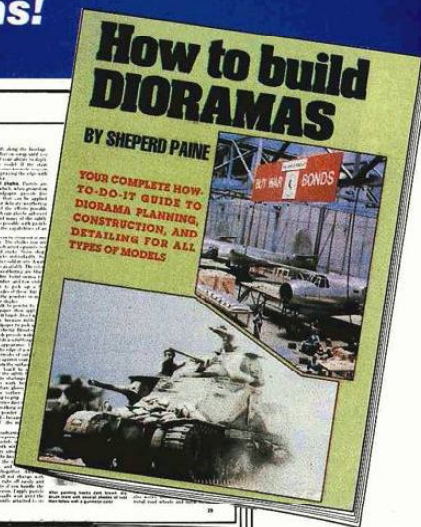
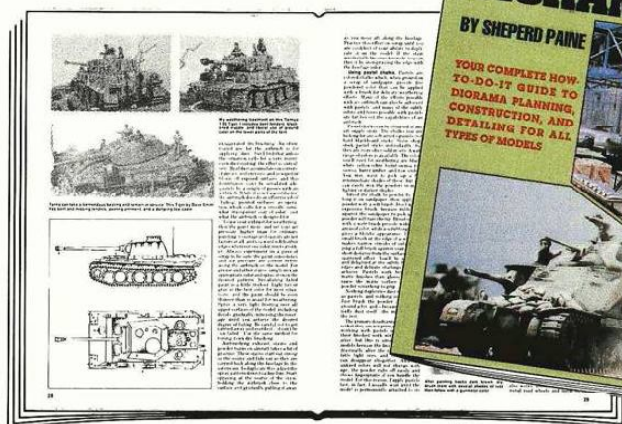
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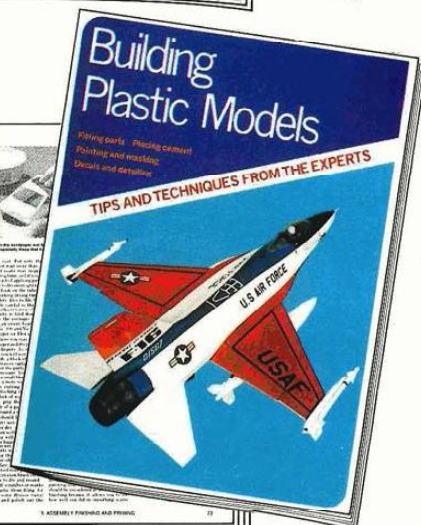
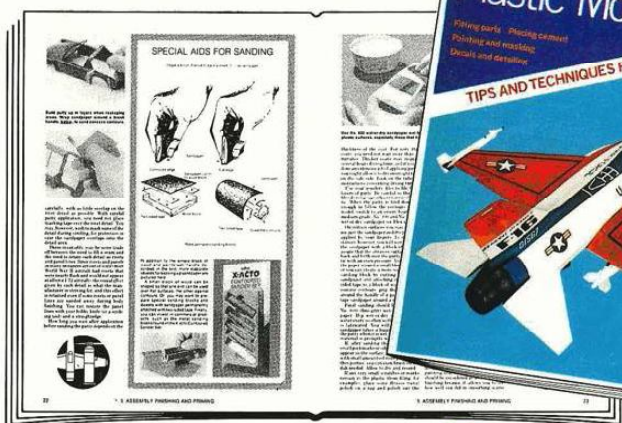
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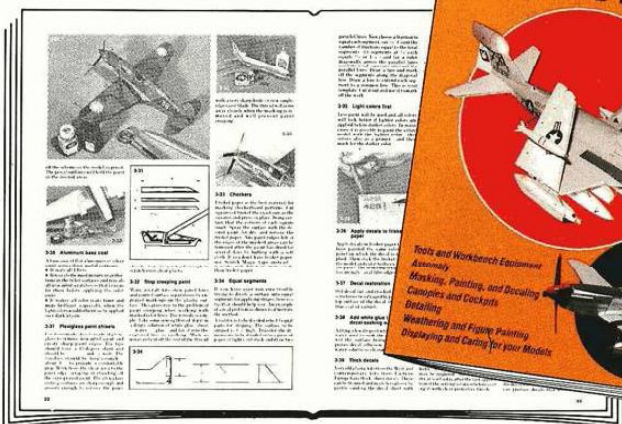
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